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The strategy of regional promotion with the network between university, industries and local government

Introduction of Activity of Iwate University and INS-

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Content



1. Introduction
2. Current condition of university
3. Iwate Network System
4. New Direction of Cooperation of INS
5. Collaboration between the university and Kitakami City
6. Future plan of Iwate University
7. Summary



1. INTRODUCTION

Cooperation between universities, industries, and local government
is **the key word** for regional promotion!

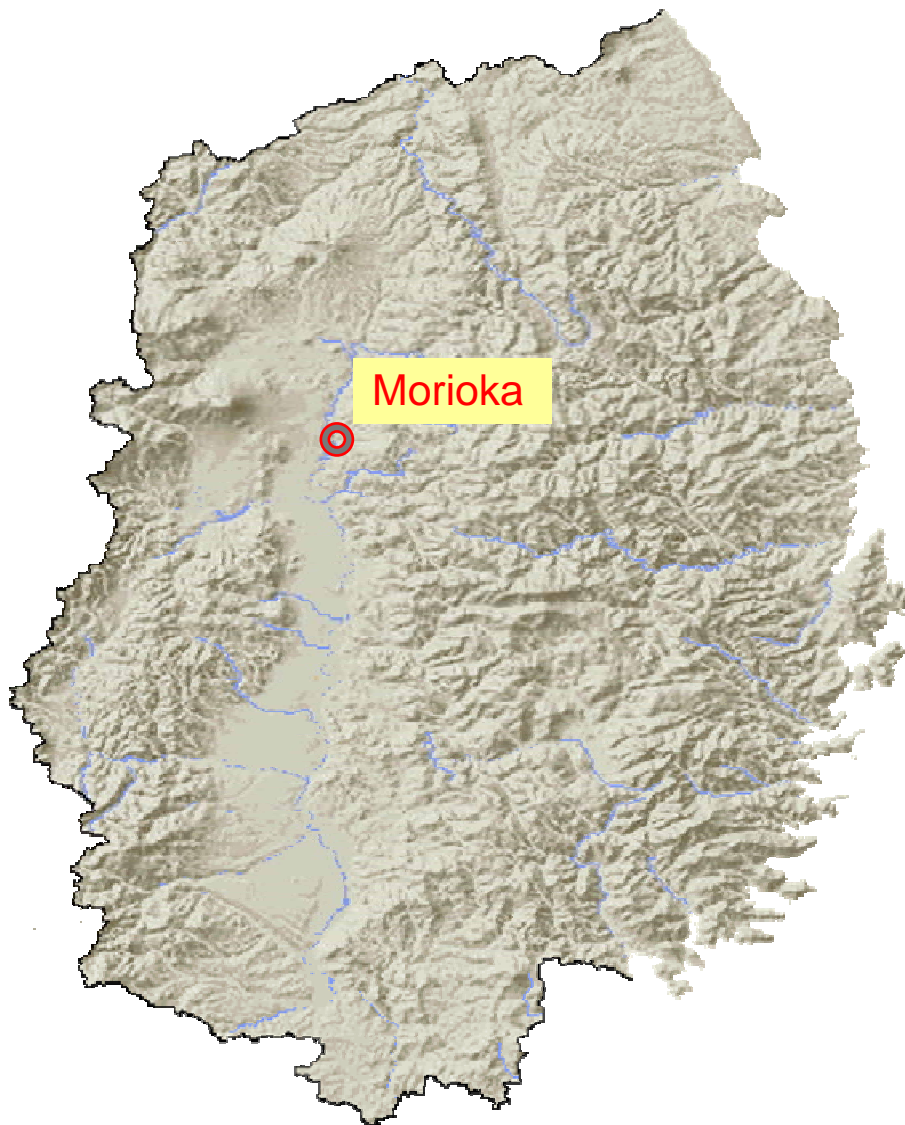
Why?

Independence of regions (local government)
from the central government

How to raise the power/potential in region?



Iwate Prefecture



2nd largest prefecture

Population 1.4 million

Prefecture capital Morioka

500 km north from Tokyo



Present condition in Iwate Prefecture

No. of companies 3305 (30th in Japan)

Amount of selling ¥2.450 trillion (32nd)

99 % of industries are small and medium-sized business

Many big companies left or closed

Shortage of job/employment (0.6/person)

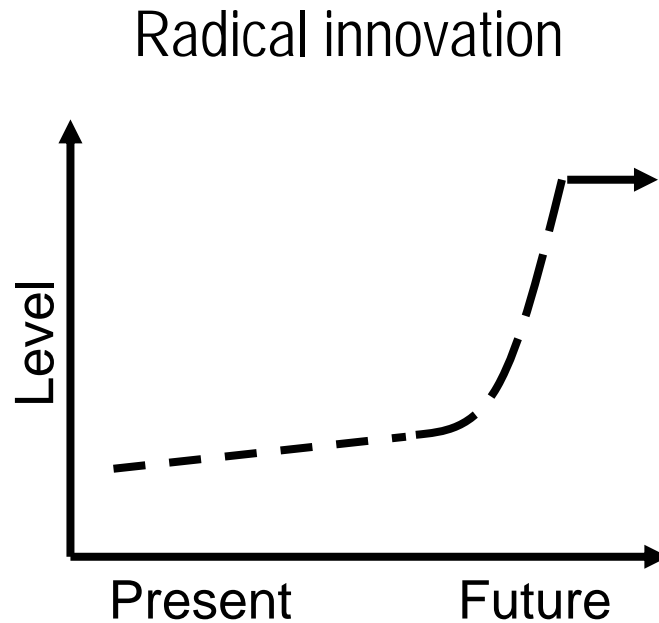
Survival competition in business



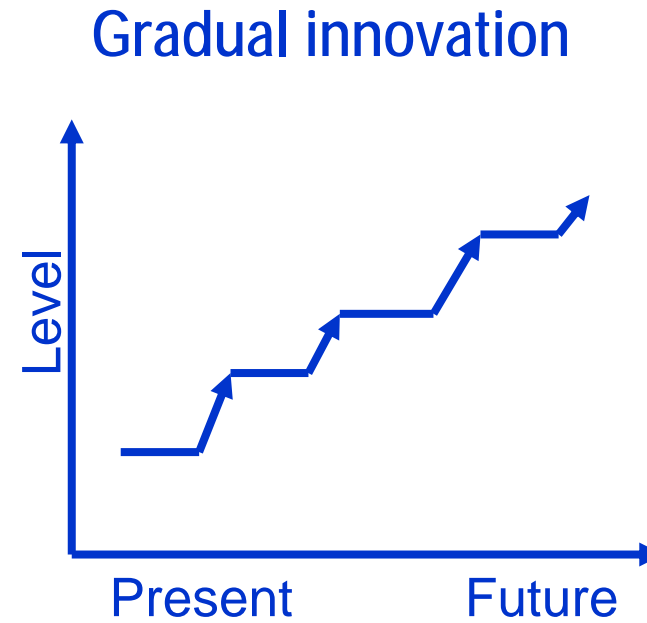
Change from only manufacturing to making R&D

Problem: no people, no equipment, no money

Technological strategy of regional companies



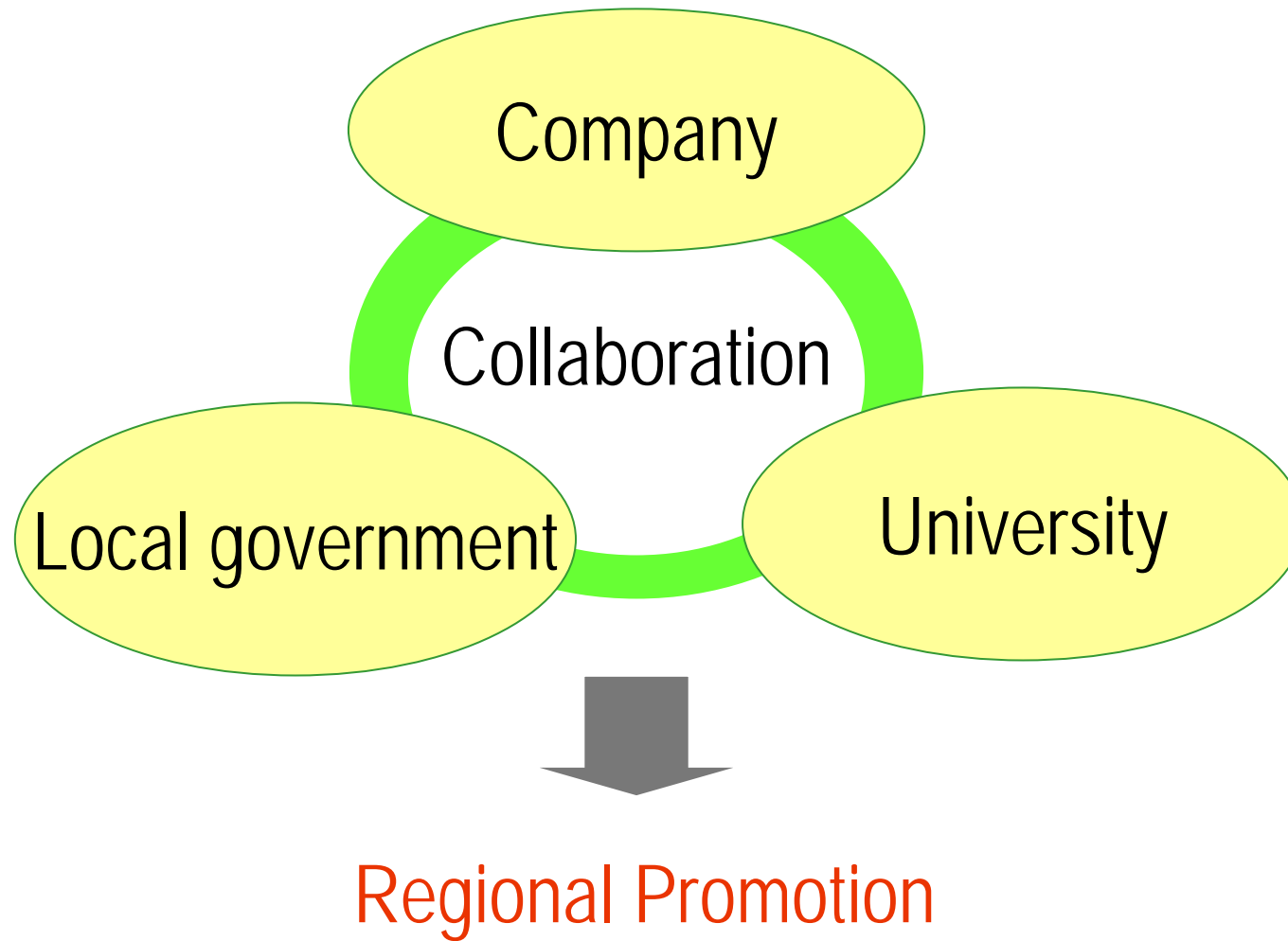
Big business



Small business

Level up of Technology

Aim of collaboration



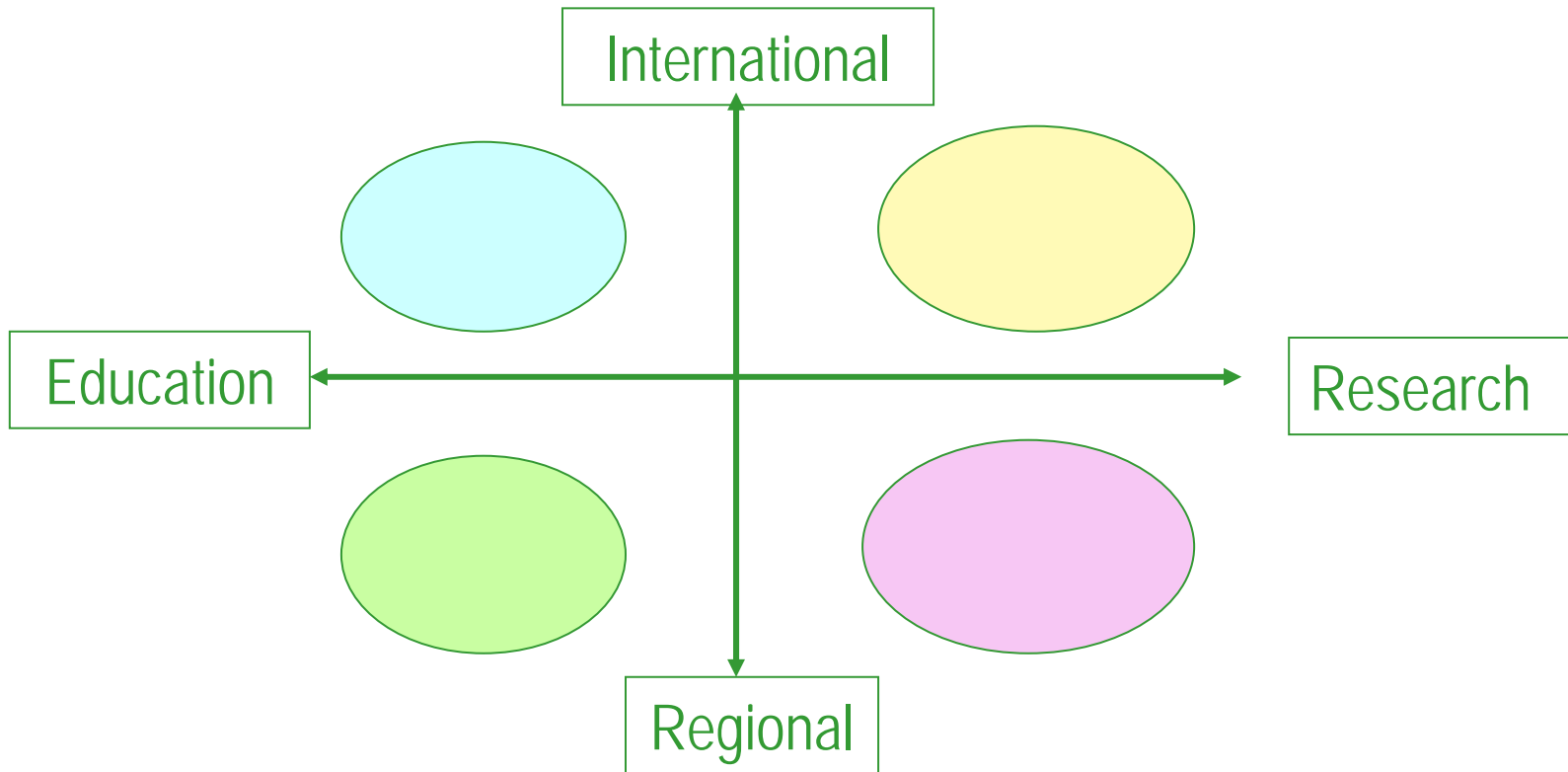
2. Current condition of university



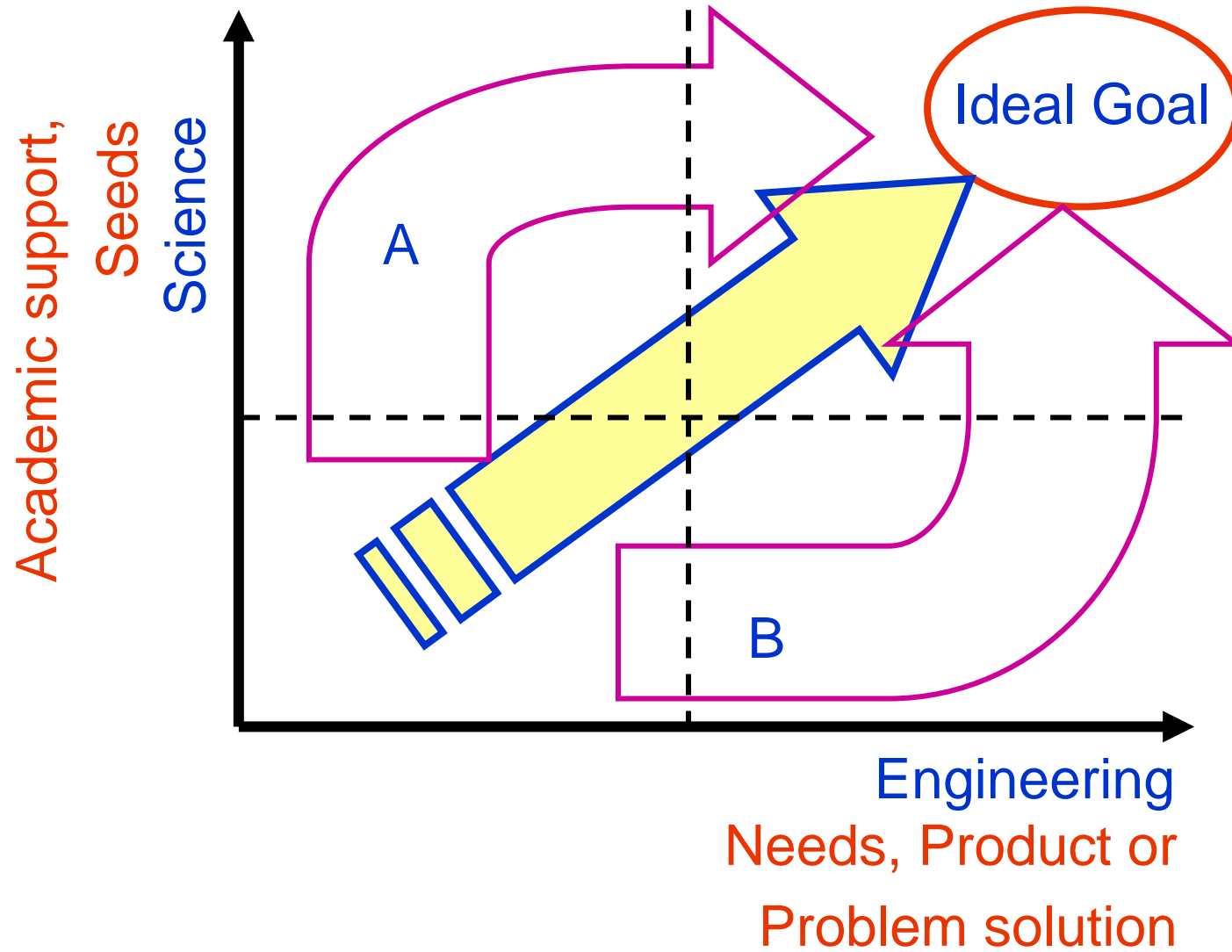
Strategically functions of university

1. World-wide research and/or education center
2. To discipline specific experts with higher level
3. To discipline experts over the all kinds of job
4. To give general education
5. Research and education for specific fields such as art and/or sports
6. The regional center of lifelong educations
7. Regional and/or social contribution with cooperation between university and industries
 - ◆ (中教審・大学分科会による大学の機能(朝日新聞2005/1/14))

Principal concept of university



Collaboration



Strategy of Iwate University



Three missions

Education, Research and **Social contribution**

Contribution to regional promotion

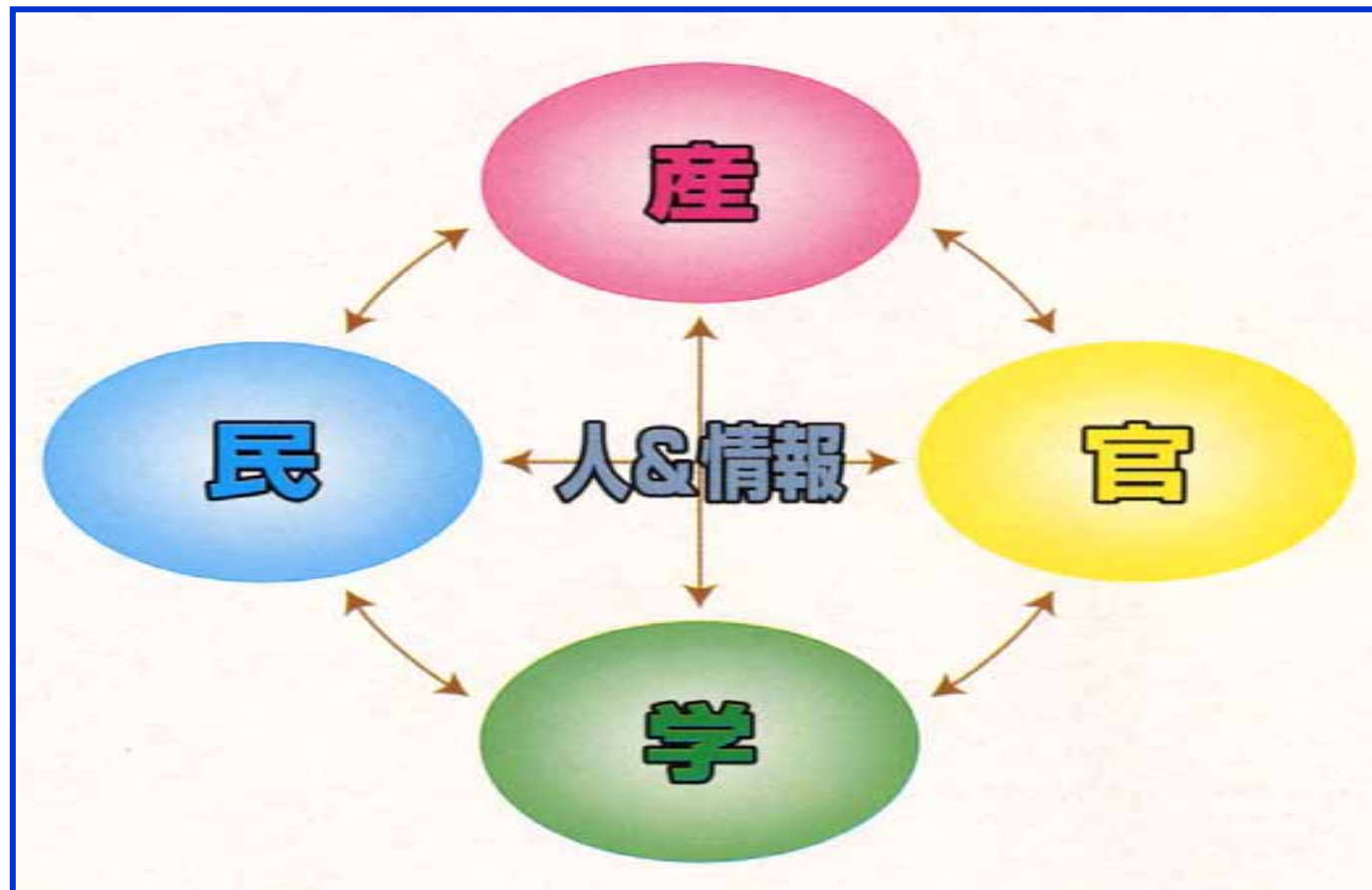
Cooperative agreement with 8 cities in Iwate

Restructure of “The Center for Collaboration of Research and Development” to “**The Center of Regional Collaboration in Research and Education**”

3. Iwate Network System Foundation in 1992



Aim: To promote science and technology and the activity of regional industries with cooperative research and development by making human network and exchanging the information related to science and technology in Iwate Prefecture



At 2nd Conference of Cooperation between Industries, Universities and Governments, Kyoto, June 8, 2003



Award of Minister of METI





Iwate Network System (INS)

Why was INS organized?

What is INS?

What are the characteristics of INS?

Why is INS received the high evaluation?

What will INS do in the next?

Why was INS organized?



Back ground of INS

The university in late 80`s

No research staff , No money , No equipments

Sense of crisis

Is the university without graduate school of doctoral course a real university?



Planning to set up the doctoral course

Is the university without research institutes a real university?

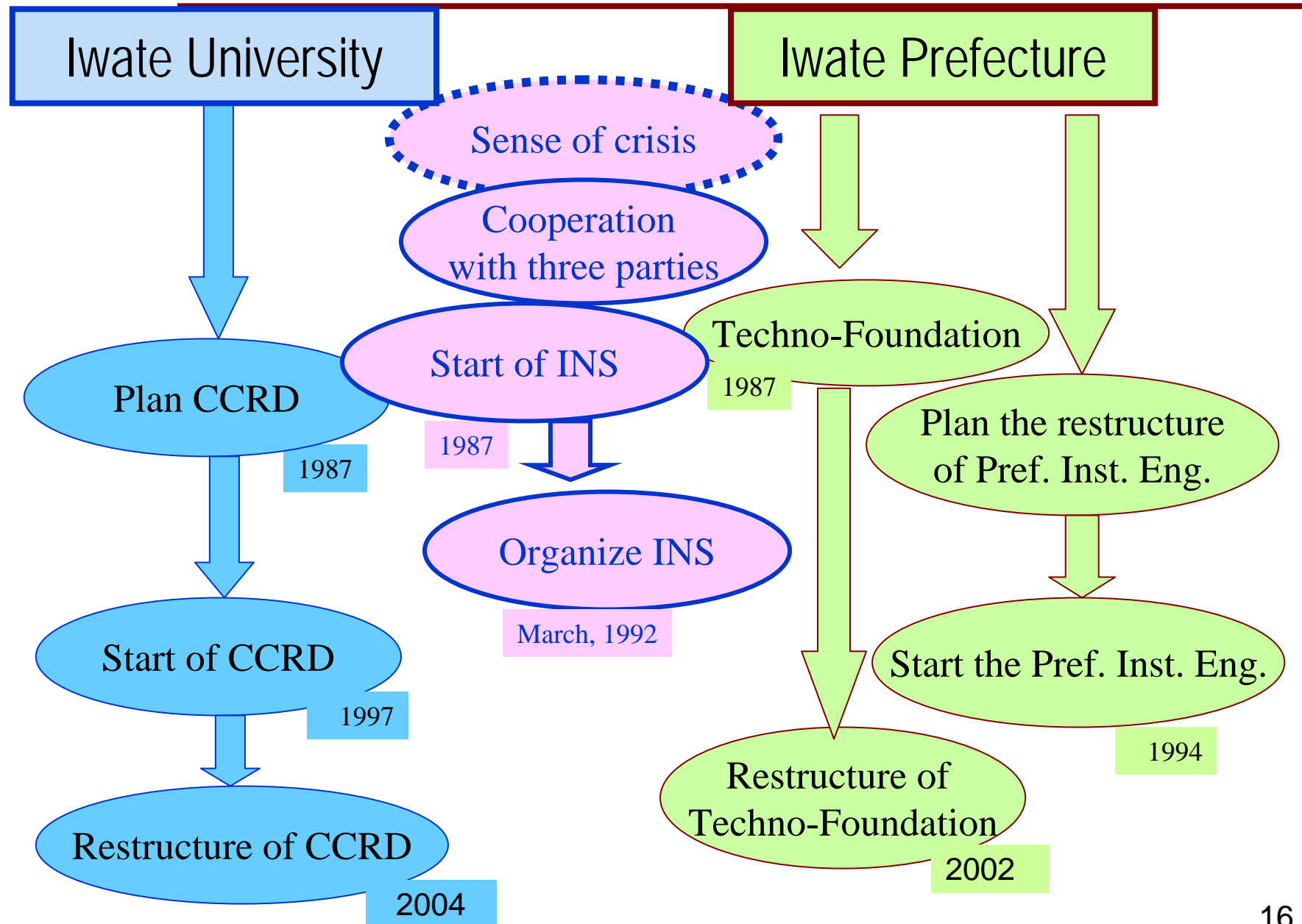


Planning the Center for collaboration

University wants the cooperation with regional industries for the center

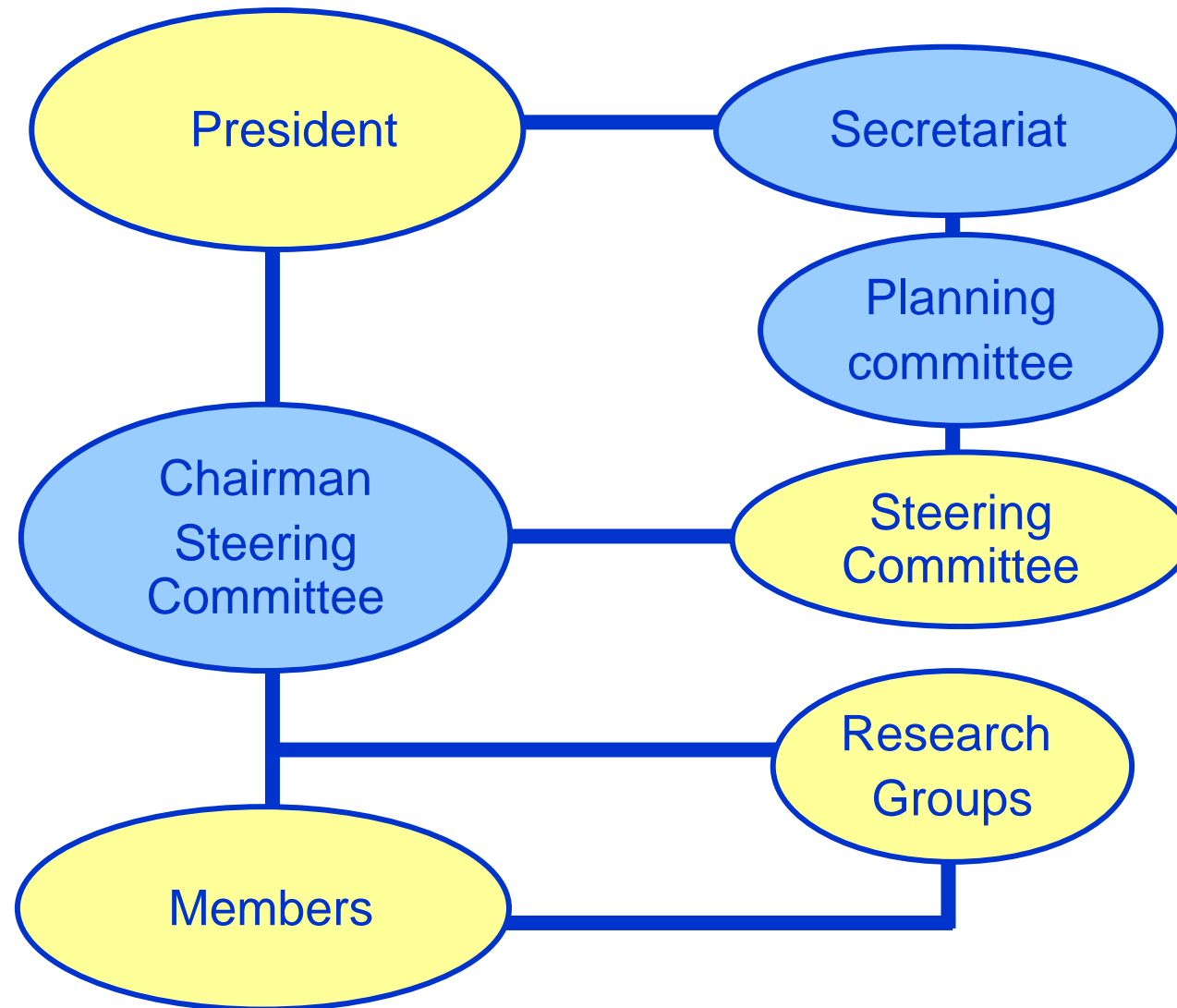


History of Cooperation in Iwate



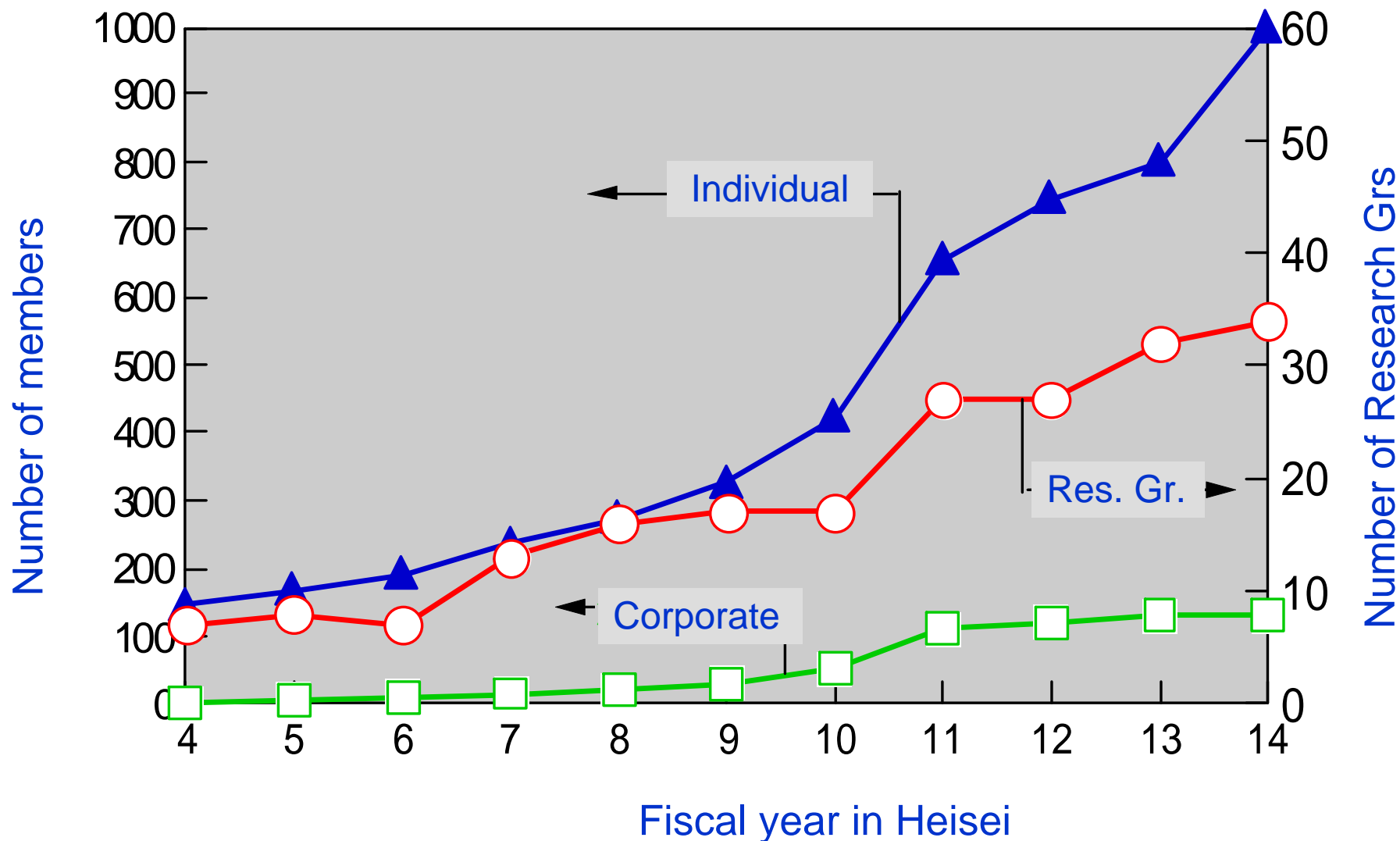


Organization





Numbers of member and Research Groups



Total 1028, (Industries 536 (inc. corporate mem.137)
academic 198, Government officers 294)



What is INS?

- Talking about **DREAMS/complaint** with drinking (since 1987)
(start spontaneously)

INS : the party always drinking and chattering in Japanese

Do quickly what we want/should to do within our own ability

➡ Many events

- Join as individual without social position
- From Cooperation between **three parties** to **four parties**/
university, industries, **citizen**, local government
- Supporting the center for cooperation
- Budget : ¥Three mil/year
- Research groups: specific fields



INS General Meeting (on 5.24. 2003)



INS Drinking Party at General Meeting





Research Groups

36 parties :

Base of collaboration between Univ. and Industries

- Needs to make the place to discuss the specific topics



Contribute the higher activity of the university

- Committee chairman: mainly university persons
- Activity: No limit how to manage

Lecturing

Consulting or collaboration

Every month, twice or three times a year



List of Research Groups

1	Tribology	11	Material processing	21	Sole-gel processing	31	Die and mold technology
2	Technology on energy alternation	12	Design of city	22	Usage of magnetic field	32	International industry interchange
3	Usage of geothermal energy	13	Ground and disaster prevention	23	Digital engineering	33	Local industry
4	CO ₂	14	Multimedia	24	Relation between human and animals	34	Usage of not used resources
5	New Materials	15	Ocean and coast society	25	Region and information systems	35	Sports in region
6	Applied biology and organic chemistry	16	Marketing	26	Multi-robotic systems	36	Green hydrogen
7	Simulation	17	Welfare engineering	27	Virtual Company		
8	Space and aviation	18	Design of structure	28	Environment of housing		
9	Superfine polymer	19	Environment and recycling	29	Bioscience		
10	Electronic devices	20	Build-up an active town	30	Gigabit networks		

Winter Meeting and Family Party



INS 冬季講演会 & ファミリーパーティー 2001年12月8日



Publication for high school boys and girls



Lecturing

「Invitation to Lecture in Iwate University」

Since 1994

Saturday afternoon

120th on 2005



Publication using lecturing
memo



Present it to high schools in
Iwate Prefecture



Seminar on “Interesting Research in University” for high school people



Invitation to
Natural Science and Engineering field





Science School for Citizen (Kitakami Aug., 2002)



1407 people
in two days





Evening Forum

Invite a top person at companies to talk about his strategy, problem, development of products and so on with beer and sushi every two months.





Other events

- **Regular Meeting**

- Open forum on “to preserve the lovely earth” in August, since 1992
 - Aurtum meeting in November since 1992

- **Interchange of three parties in regions**

- INS is invited to any cities in Iwate

- **Lecturing at companies** since 2000

- University stuffs to give specific lectures to engineers there

- **Regular meeting with high school teachers of physics and chemistry** since 1995

- **International symposium** since 1997

- Interchange with foreign students and others

- **Interchange with people in other prefectures** since 1993

- INS in Osaka (4) , INS in Tokyo (3), INS in Tokai

- **Golf competition** twice a year since 1996



What are the Characteristics of INS?

Key persons

with their supporters in the university, local government, Techno-foundation, and graduated people

Organized by University people

Reliable to the university

Not moved and keep the network continuously

Individual

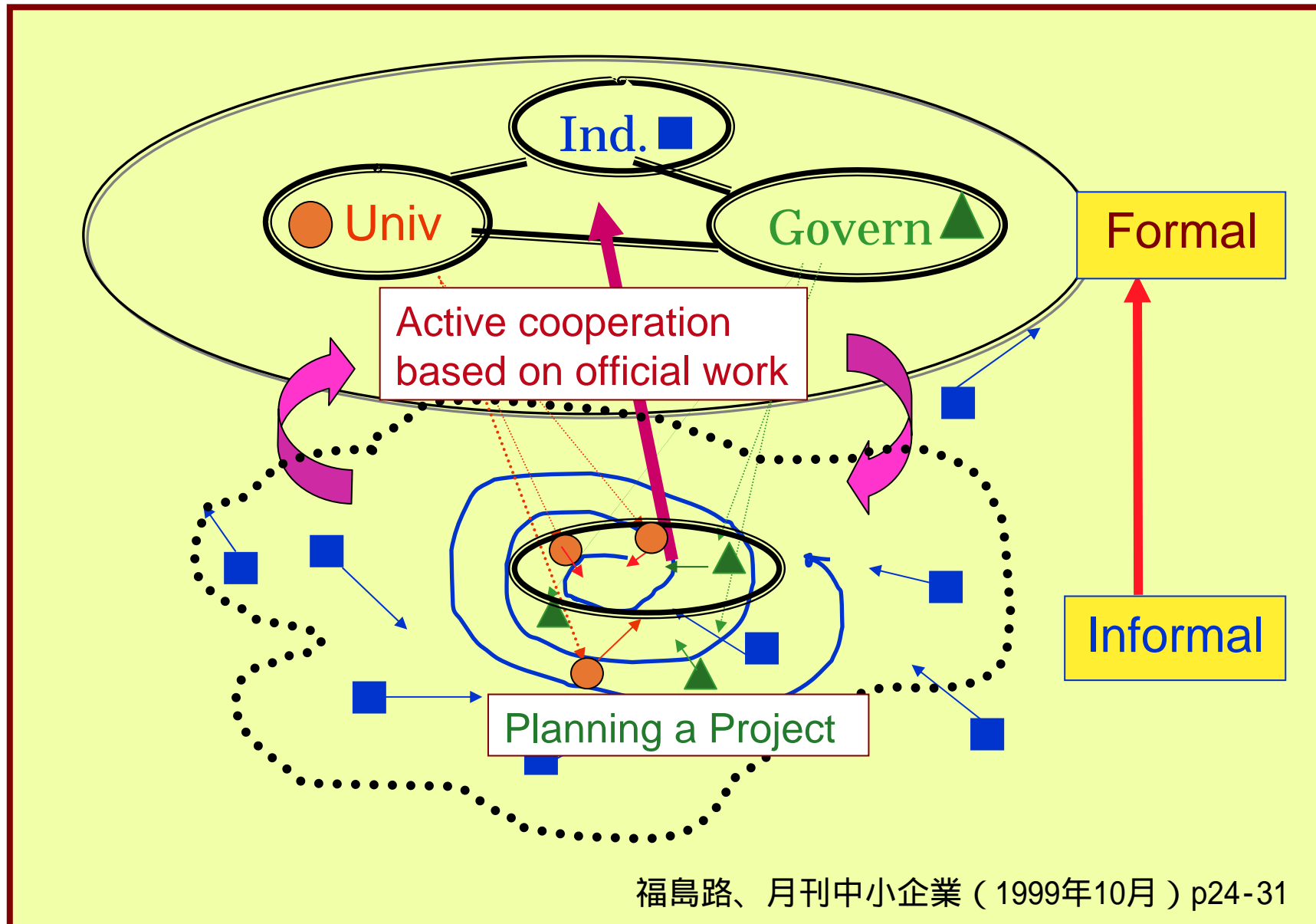
Free to talk and to do from organizations

Ameba, Bottom-up, Volunteer

Expand the members in other fields/organization

Faculty of Engineering All faculties, Pref. University, City and town government, commerce chamber, high school outside Iwate

Image for INS



福島路、月刊中小企業 (1999年10月) p24-31

Why is INS received the high evaluation?



INS works

Not drastically, but step by step in region

Most valuable results of INS



Build-up of Face-to-Face human network

- * Good cooperation between core members from the local government and the university
 → INS behaved as a coordinator
- * There is only one university having an engineering department in Iwate



Is INS like a cluster?



National Research Project

Introduce the national R&D projects consisting of three parties for getting research fund from the central government (Total amount was around several ¥100mi)

STA 生活流動研究(1993-1995)

STA 地域先導研究(1996-1998)

MITI Regional Research Consortium(1998-2000)

MECS/JST 地域結集共同研究(1999-2004)

STA RSP and Post RSP(1996-2004)

MESCS 都市エリア産学官連携推進事業(2002-2004)

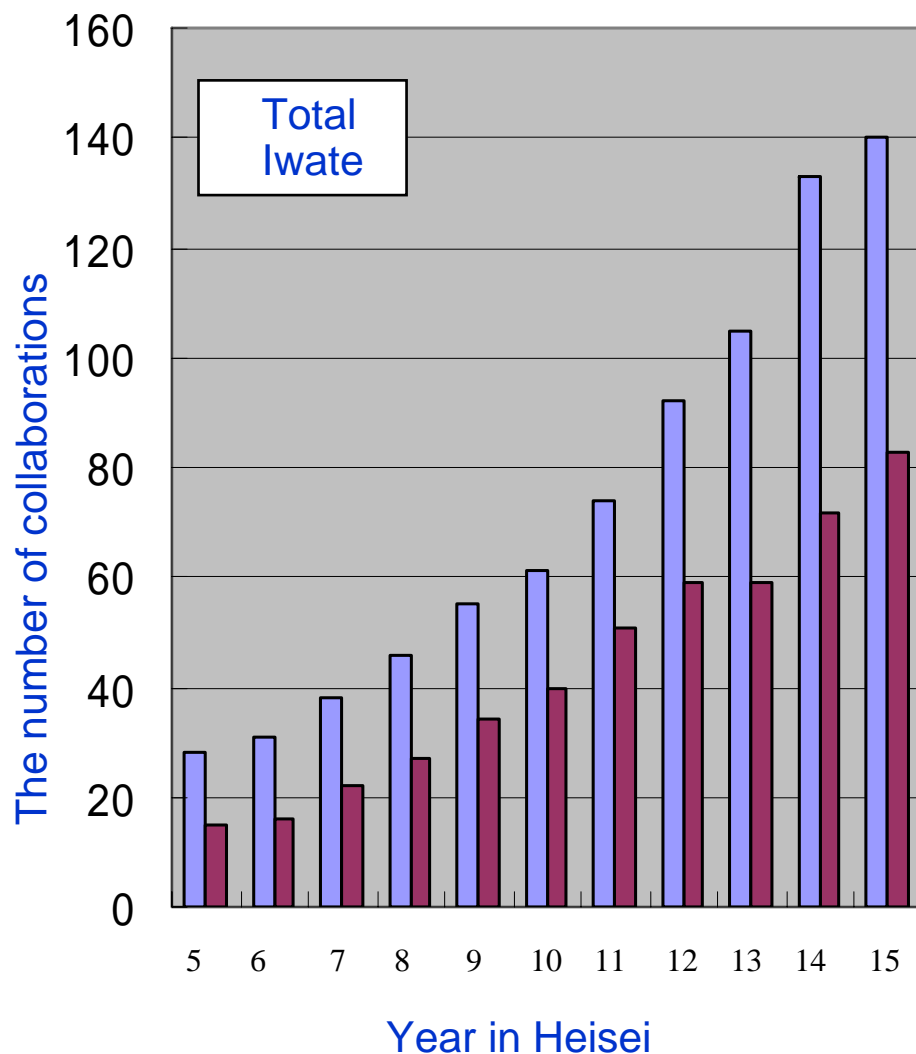
MESCS 都市エリア産学官連携推進事業(2004-2006)

JST Miyagi Plaza's Project (2004-2006)

METI Regional New Consortium 11project(2001-)



Collaboration of Iwate University



1998: 65 (10th in Japanese Univ)

1999: 74 (11)

2000: 92 (11)

2001: 104 (12)

2002: 133 (13)

2003: 140 (18)

* 1st place of the number per staff of science and engineering

Characteristics :

20 % increase every year

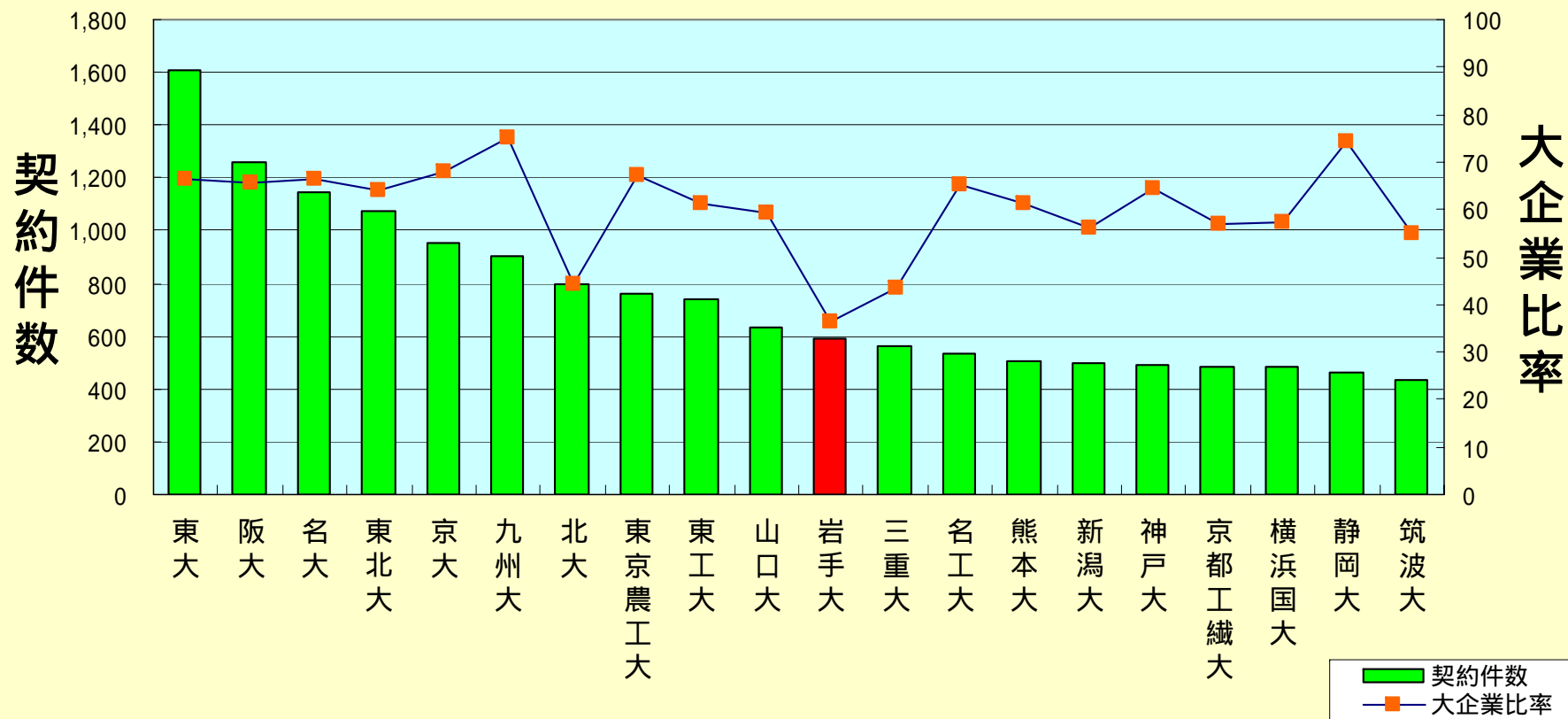
More than 60 % collaboration with companies in Iwate pref.

More than 50 % collaboration with small business



Rate of collaboration with big companies

共同研究契約件数上位20大学 (83 ~ 01年度累計)





Other activities

To encourage small businesses to be active
No. of companies to get the support project for small
businesses of the government
e.g.: corporate 3,305 (30) Amount of sale ¥2450 bil (32)
Application 101 (18)
Planning the general design of Iwate Prefecture
Hazard Map for eruption of Mt. Iwate
Support the regional engineering centers as committee
member



What will INS do in the next?

Next-stage Policy of IN S

1st Phase : (1992~2002)

–To give the opportunity to make human network between industries, university and local government

(“Itumo Nonde Sawagu kai”)

2nd Phase : (2002~)

–To make various projects using the network between industries, universities, local governments and citizen

Remarkable results recognized by other people

(“Itsuka Novel-sho wo Sarau kai”)



4. New Direction of Cooperation of INS

To make cooperative results visible by citizens

- * Economic impact in region
 - Generate venture business
 - Expand employment in region
 - Succeed and development of basic technology
 - Technology transfer from Univ. to increase Added value
 - Training or discipline technicians and engineers who succeed to and develop technology (Monozukuri)

Example of venture business from Iwate Univ.

会社名	会社概要	大学との関係
(株)T&K	設 立：平成14年1月 事 業：有機被膜処理	森邦夫工学部長の有機メッキ技術の応用
(株)ラング	設 立：平成15年4月1日 資本金：300万円 事 業：考古学遺物の描画作業等埋蔵文化財の情報処理関連事業の実施	横山隆三工学部教授の画像処理及び地形情報処理技術の応用
(株)アイカム ス・ラボ	設 立：平成15年5月28日 資本金：1600万円 事 業：情報通信機器・機械装置・計測等に関する開発・設計・製造・販売	岩淵明工学部教授、清水友治同助教授等が小型減速装置の開発を指導
(有)EWI	設 立：平成15年8月 事 業：理科教材の開発販売	八木一正教育学部教授の研究成果を活用した理科教材（大学向けに限定しない）の開発販売
サンロック(株)	設 立：平成15年9月10日 資本金：10万円 事 業：自然環境に優しい滑り止め融雪剤の製造・販売	小野寺英輝工学部助教授の研究成果である「凍結路面滑止め材とその散布法」を基とする技術開発、活用
(有)イグノス	設 立：平成16年6月10日 事業：画像処理装置・微細測定装置の開発販売	清水友治工学部助教授が微小測定装置の開発を指導



I-comes Labo

Iwate Communication Mechatro-System Laboratory

First venture of Iwate University

Excutives : Two from Alps Electric Co. and Two from Iwate University

Field: Development of devices for information equipments

e.g.) Small speed reducer formed with plastic molding

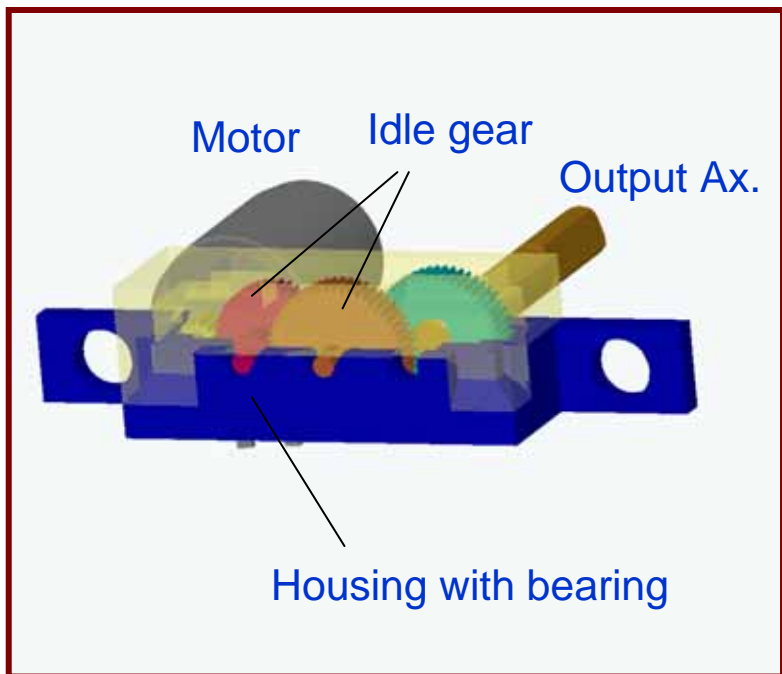
Application to small printer

joint device of robot-hand and so on

Foundation : May, 2003

Place: in the incubation room of Iwate Univ.





Speed reducer (1/47) formed with die and mold technology



Prinpack



5. Collaboration between the university and Kitakami City

Kitakami City wants a university to come for inviting companies from central Japan, because the change in policy from just manufacturing companies to companies carrying out the research.

Kitakami City government agreed to negotiate the friendly collaboration with Iwate University in 2001.

Kitakami City financially supported to found the research center of die and mold technology



岩手大学工学部附属

金型技術研究センター

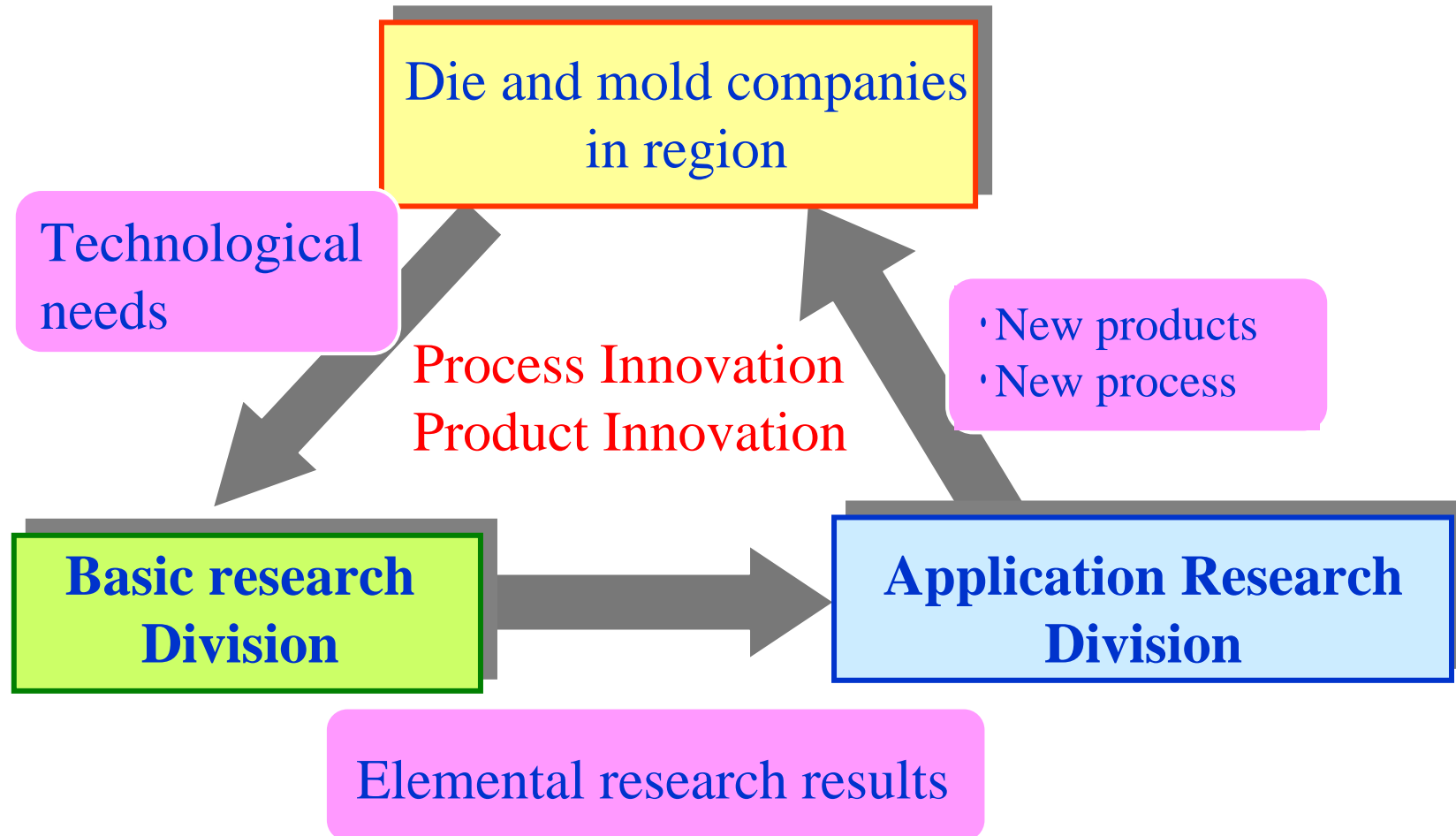
**Research Center
For
Die and Mold Technology
Iwate University**



Basic Research Division
in Morioka



Application Research Division
in Kitakami



6. Future plan of Iwate University



Train useful workers

Keep/discipline possible workers in region

New approach of the graduate school



Background

Principle Law of Science and Technology

1st Plan (1996-2000)

2nd Plan (2001-2005)

* Priority Fields “Life science”

materials “Nano-technology and new
”Information technology”

“Environment”



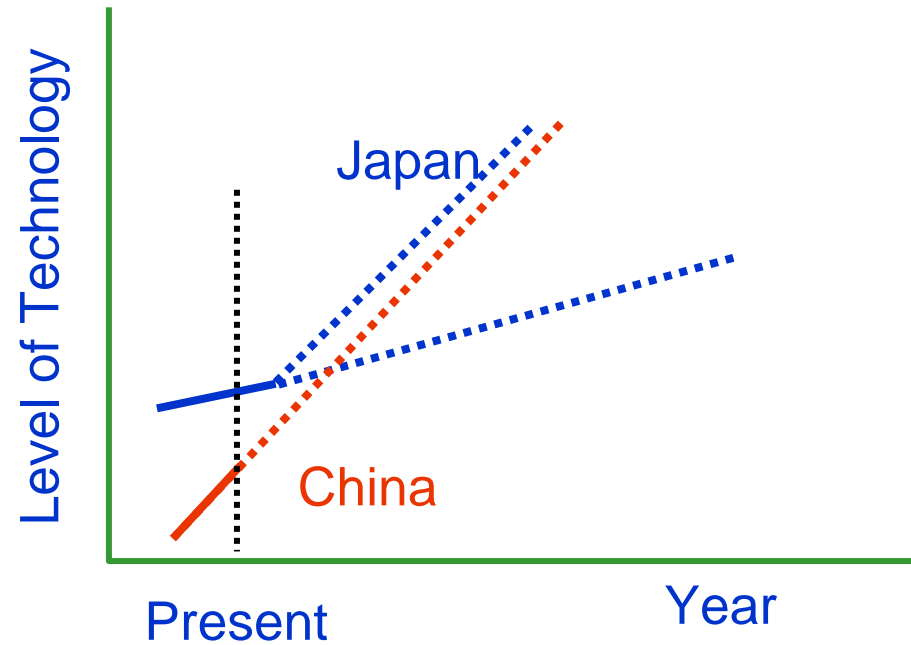
The importance of “Production Technology”
(Monozukuri) is not recognized or ignored?



Recovery of Monozukuri Japan!!

Main problem about Monozukuri is who deals with?

Production Crisis in future



Supply high educated people from academic



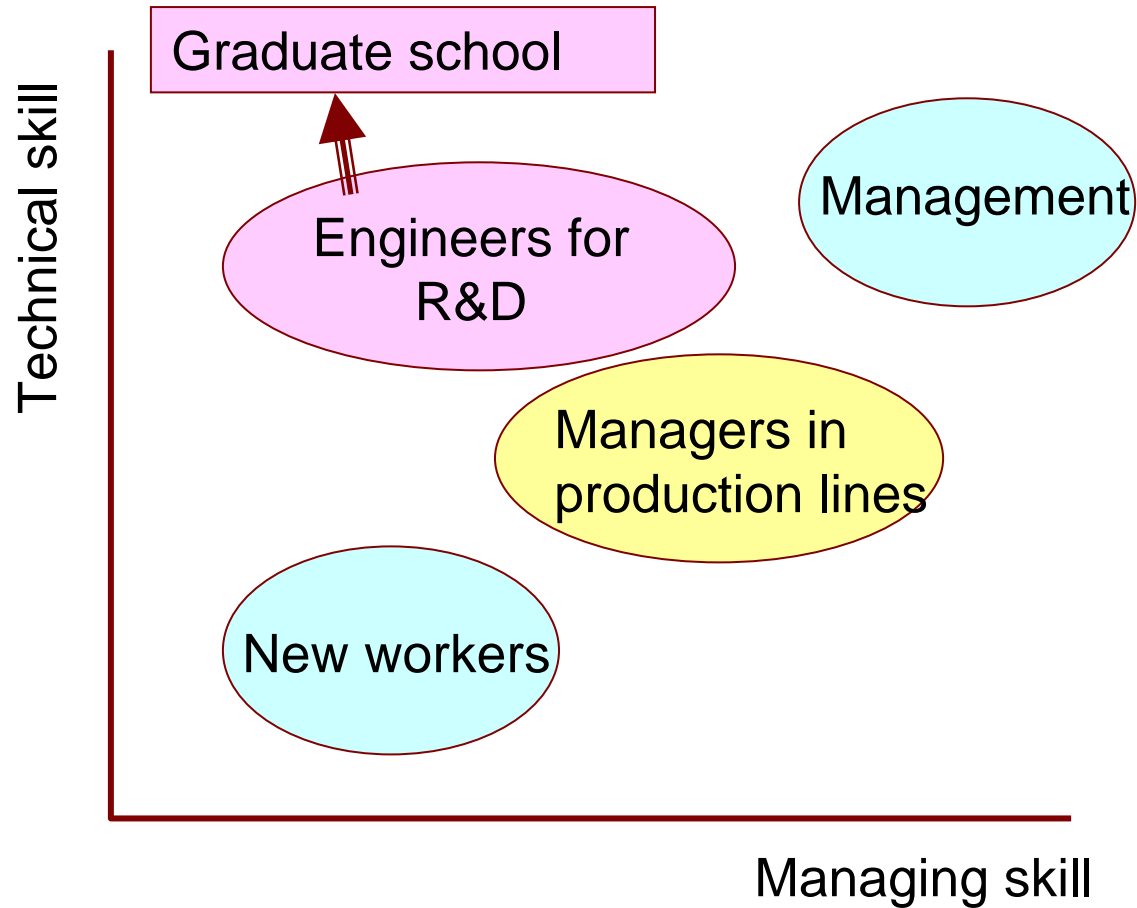
New Training Program by METI

Support the industries to reeducate or discipline the core workers relating to production.

Circumstances in Region

- Shortage of workers having multi-talent
(Engineers for R&D, Engineers who are acquainted with management)
- There is no time and no supervisor to disciplines new comers.
- Shortage of workers who succeed experienced technique and technology

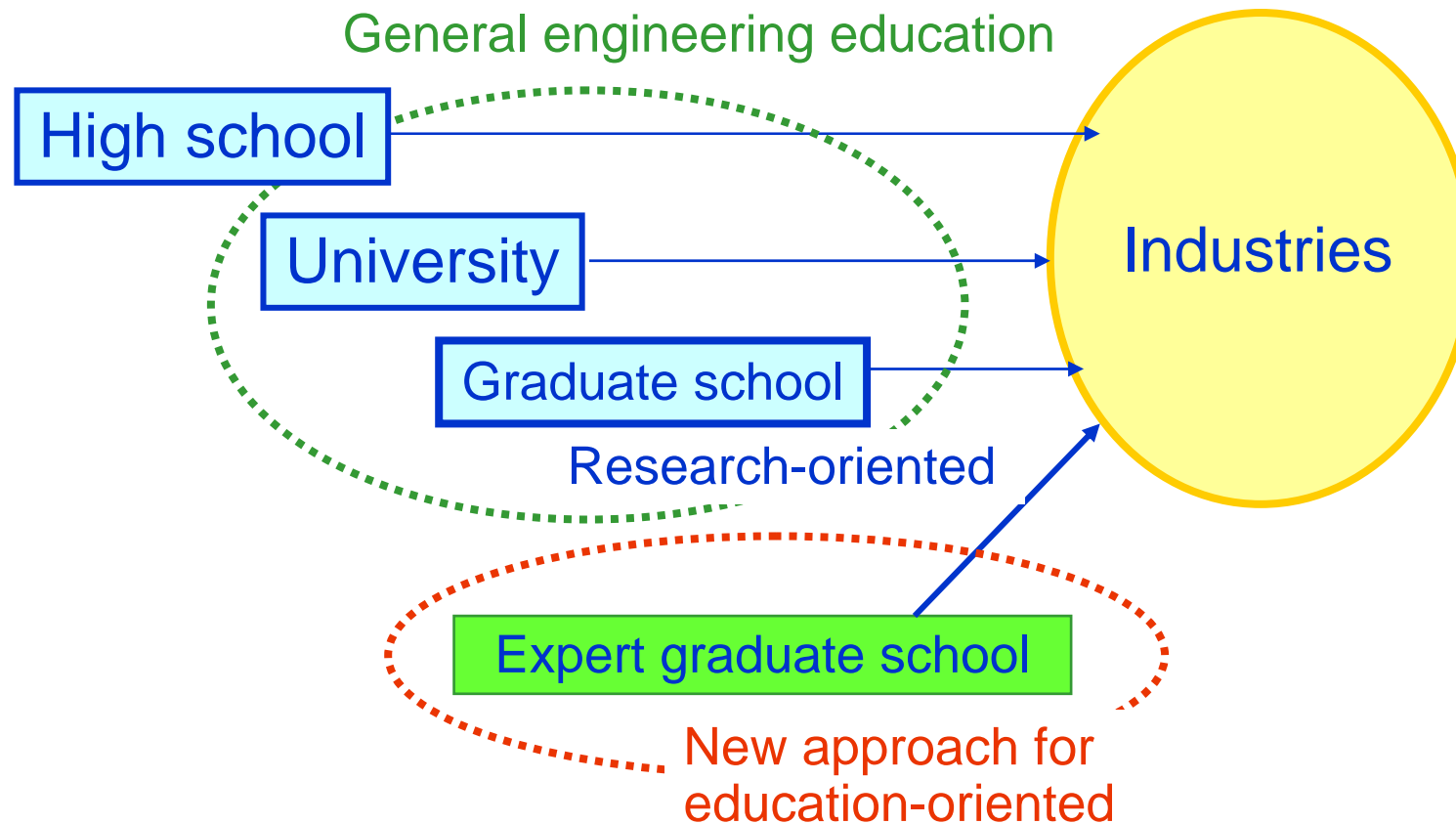
People who local small industries want



What is the role of the university?



Engineering Education system



Expert Graduate School in Engineering



Requirement of supply of engineers concerning to
Basis Technology to support big assembly companies

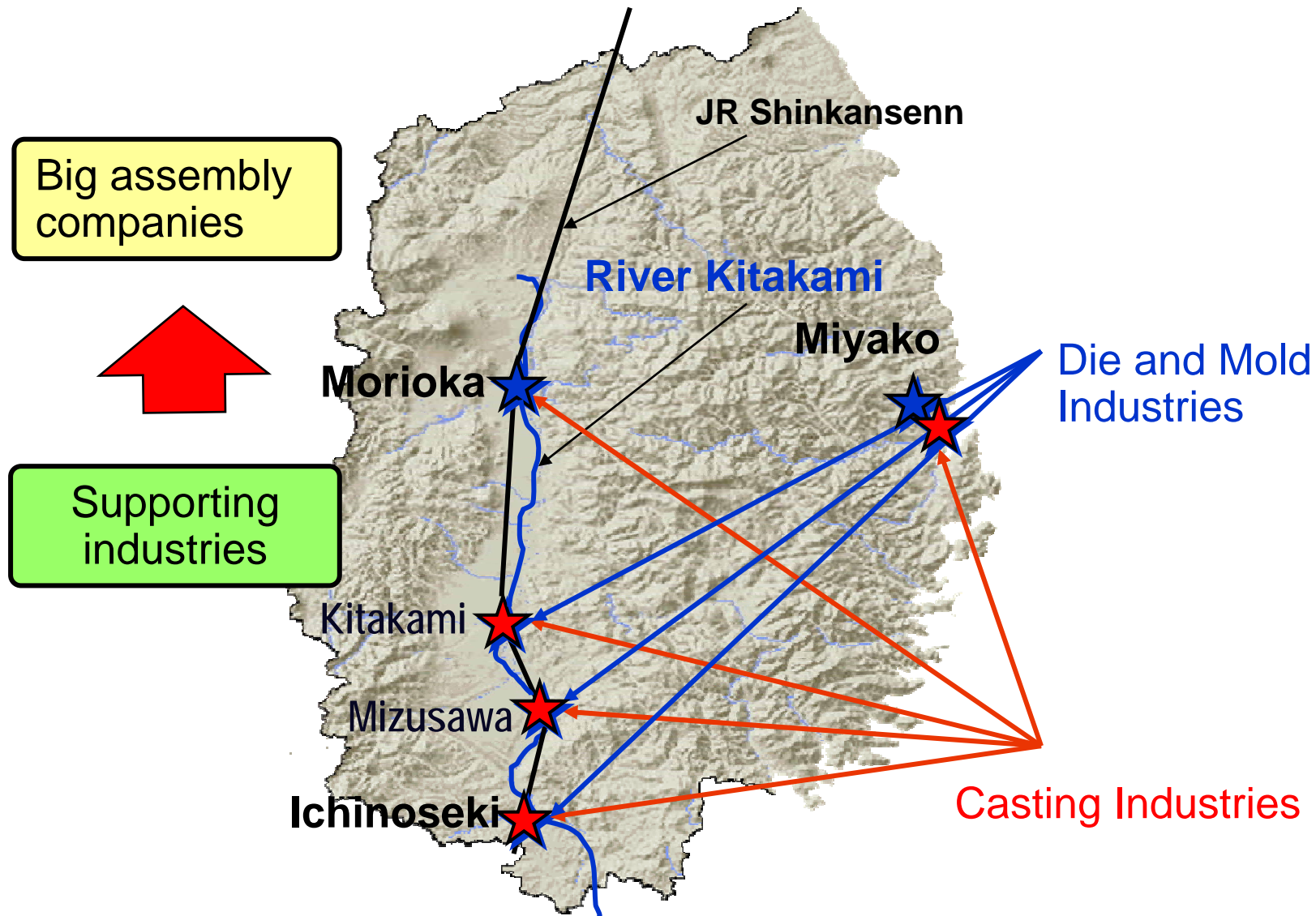
Die and mold technology

Casting

To support local industries with collaboration
between three parties.



Basis Technology on Iwate Prefecture



Die and Mold Industries



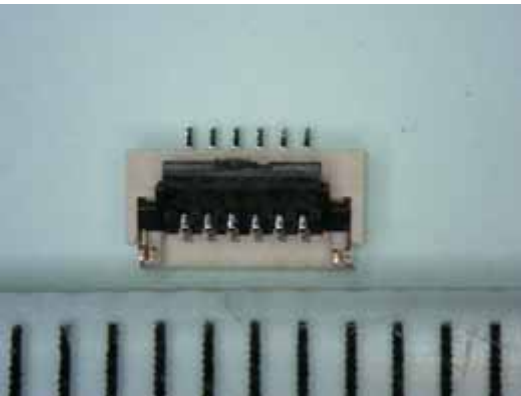
Highest level of press and mold



レンズ:加工精度 $0.1\ \mu\text{m}$
多加良製作所

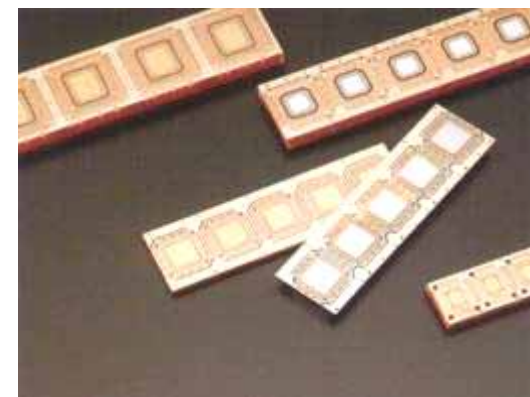


筐体:加工精度 $50\ \mu\text{m}$
筑波ダイカスト



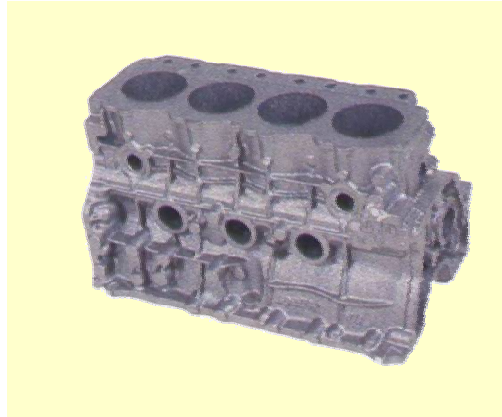
コネクター:加工精度 $\pm 2\ \mu\text{m}$
ヒロセ電機・エフビー

- Clock industries
- Parts of Electronic devices
- Collaboration



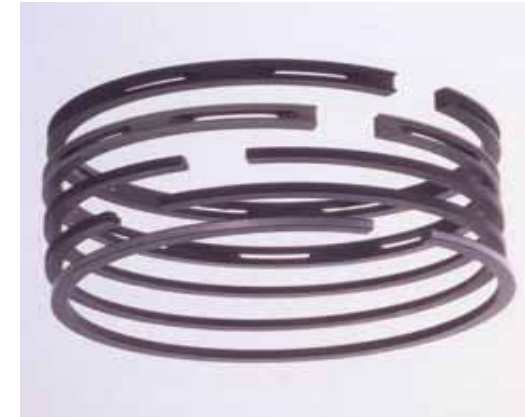
リードフレーム:加工精度 $\pm 1\ \mu\text{m}$
後藤製作所

Casting

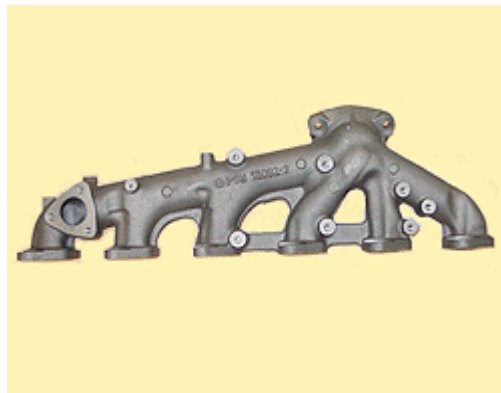


高強度・薄肉シリンダーブロック
いすゞキャスティック

Highest level of cast iron



高強度・耐摩耗性ピストンリング
日ピス岩手



高強度・耐熱性マニホールド
ハラチュウ

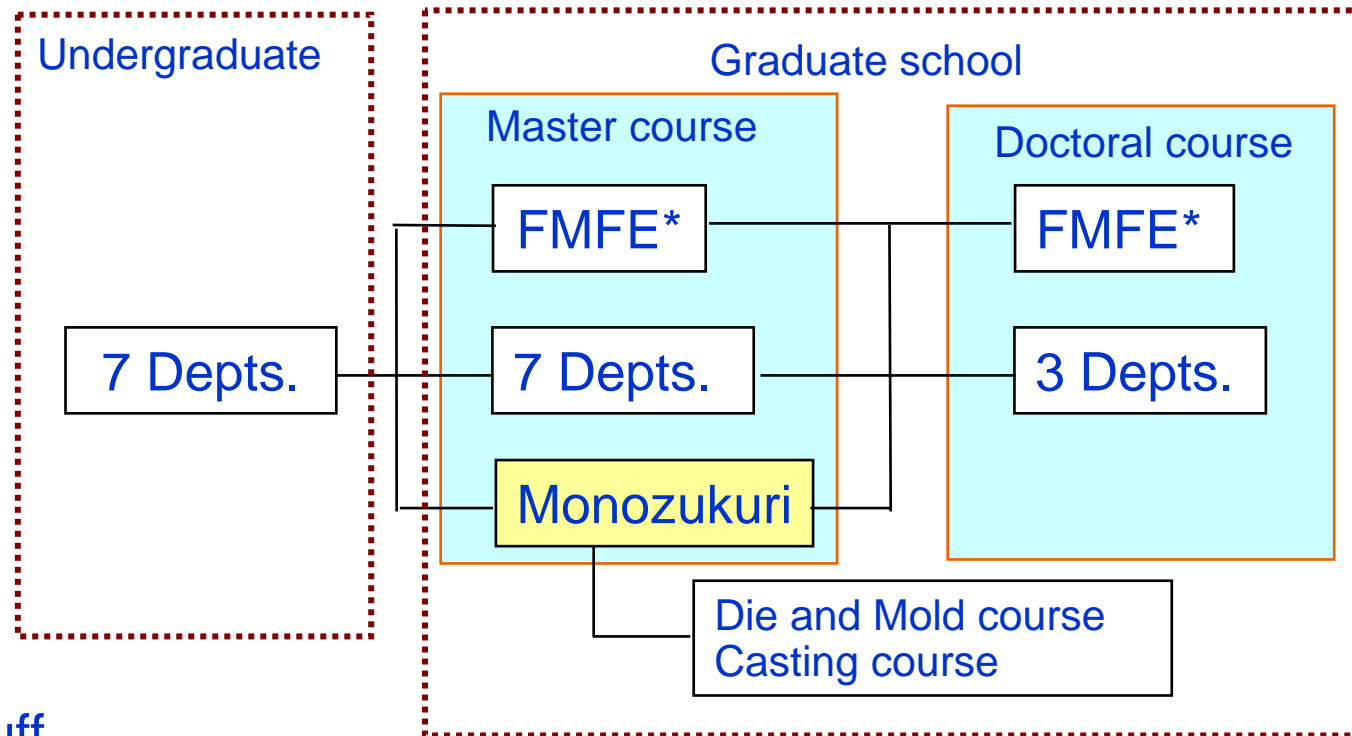
- Nanbu casting
(Traditional industry)
- Automotive parts
- Collaboration



高強度快削性ブレーキドラム
東北三和金属



Organization of Faculty Engineering



Stuff

Students 10/year

Professors 4

Associate Professor 3

Many part-time professor from industries

* Frontier Material and Functional Engineering



Characteristics of curriculum

Reflected by the needs/requirements of industries

Specific engineering subjects including managements

Much experiments and practical trainings

Long internship for more than 6 months



Competent engineers for small business

near immediately useful workers

Technological and managerial background

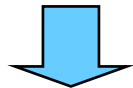
New concept



University only disciplines engineers with own staff, money, equipments



Limited money, equipments, space and staff



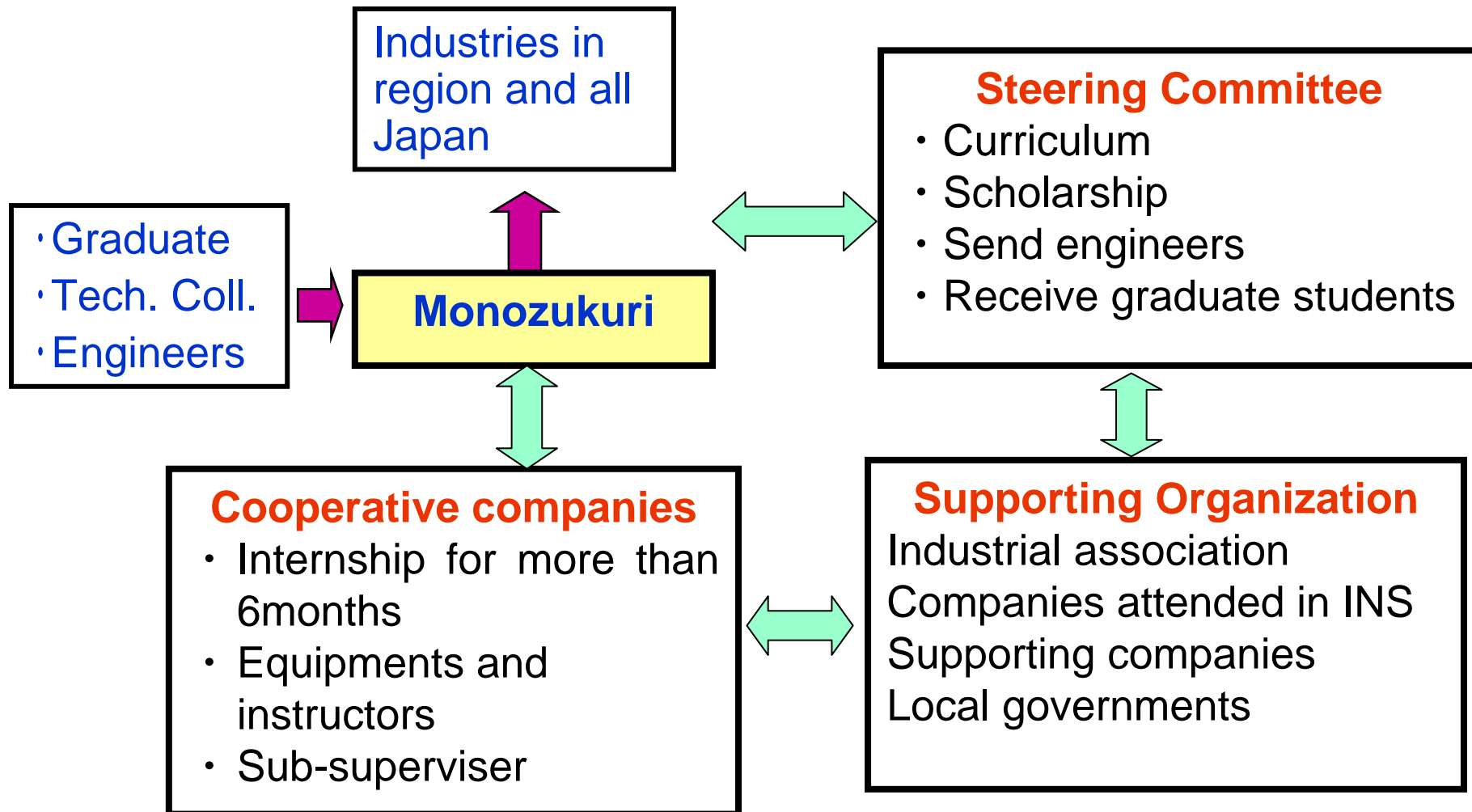
Cooperation of three parties

Shanghai Joungtong University Mold-CAD research Center



INS group visited in 2003

Cooperation



Strategy of Collaboration between three parties of Iwate University



1. Enrichment of the center

1993 Start the CCRD

2003 Start the intelligent property office

2004 Incubation rooms (1000m³) and reorganized
to “Center for Regional Collaboration of
research and Education”



CRCRE

2. Collaboration with city governments

Agreements of mutual cooperation: 8

Collaboration: 17

Researchers: 5

3. Die and Mold Technology Center

Donation from City Kitakami

4. Cooperation with INS

5. Plan of R&D Center for fusion Production Technology

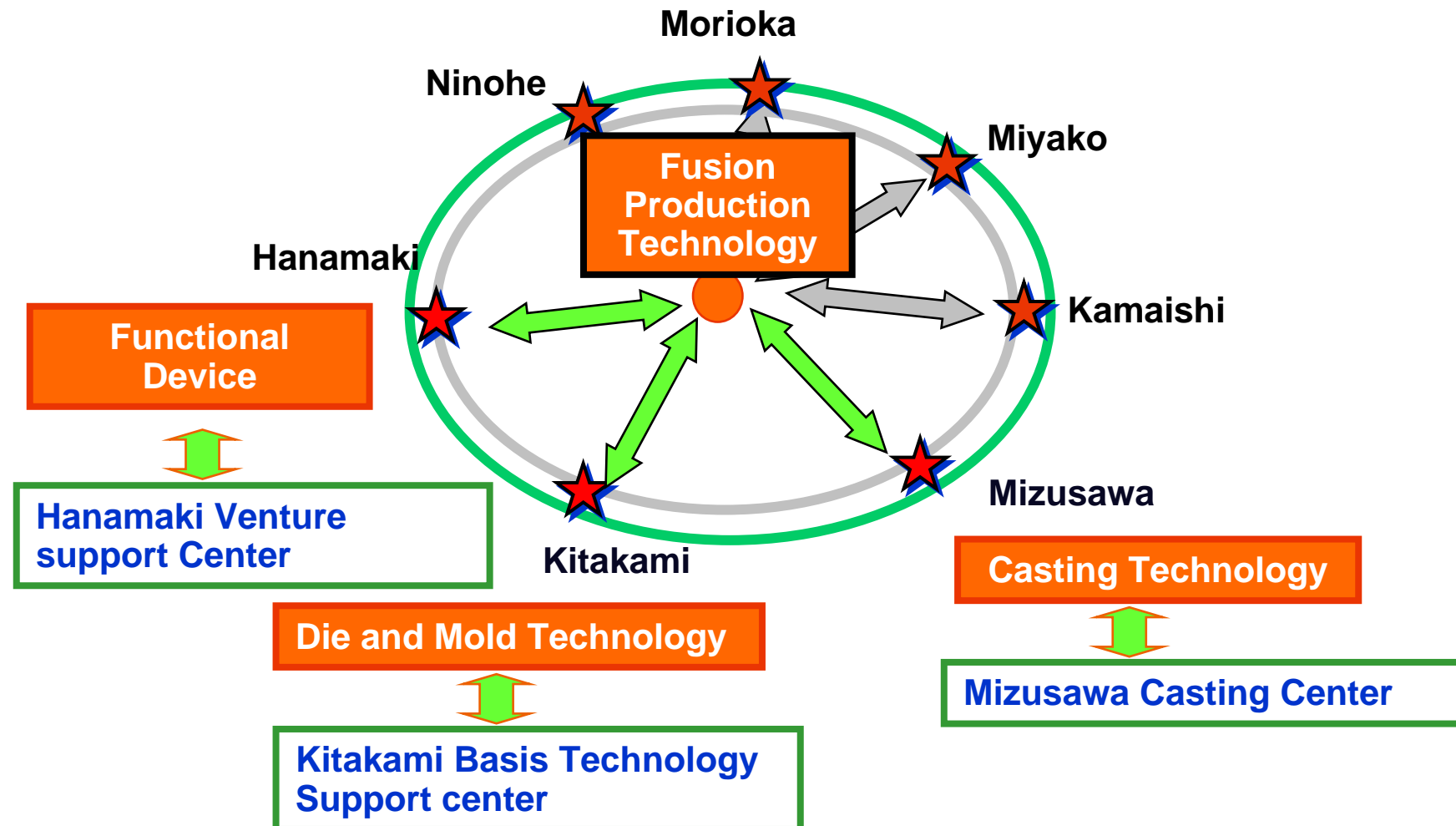


RCDMT (Kitakami)



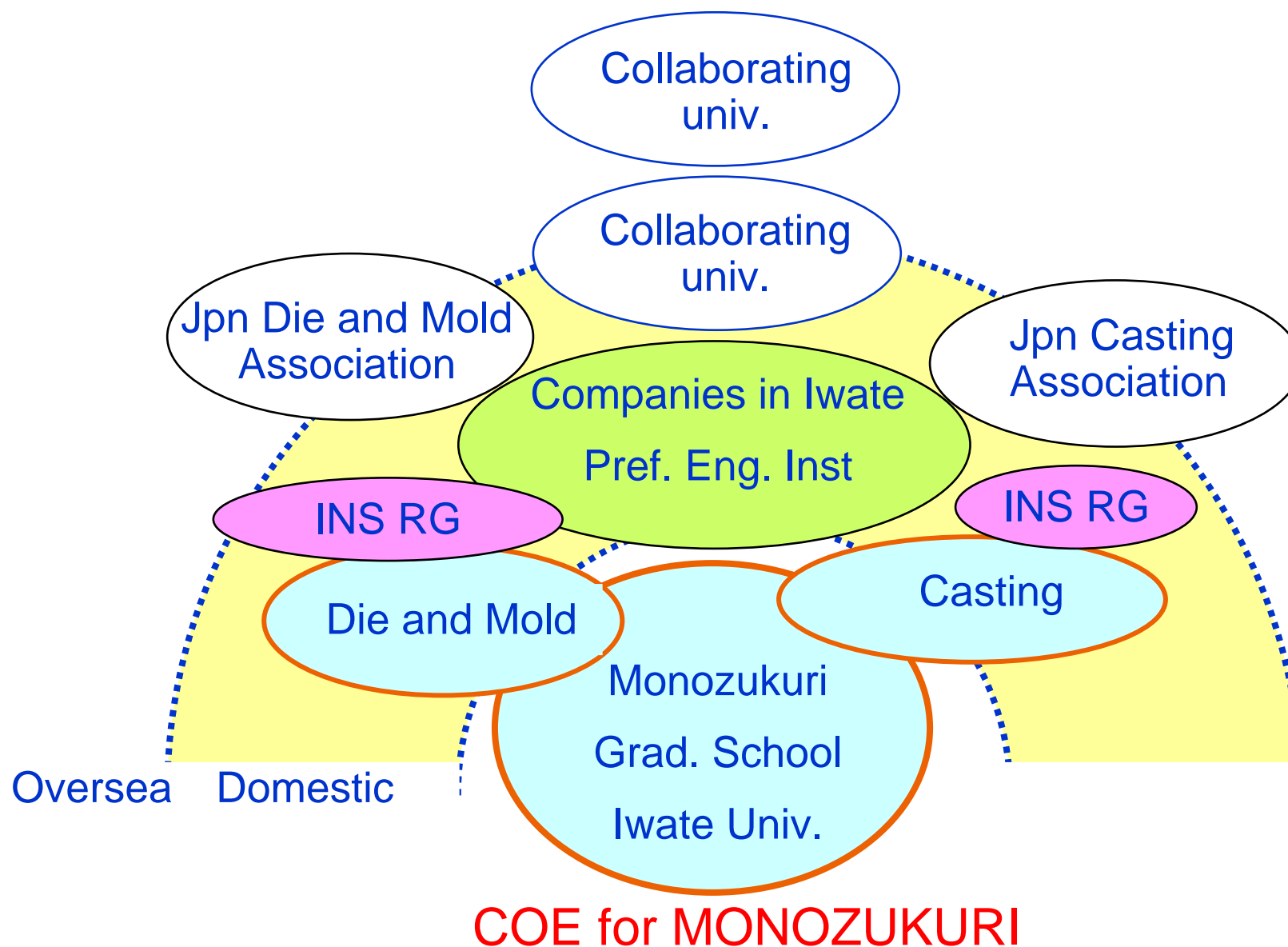
Based on the agreements of cooperation with cities

R&D Center for Fusion Production Technology





Expansion of collaboration



7 . Summary



- Step by step progress for the needs of region
 - Network > Technological contribution (Research and Development) > Venture > Education (Competent person)
- Hope to contribute the regional promotion
- New concept to found the graduate school with three parties