



The Idea of “Smart Community” in Restoration of Communities in the Tohoku Region

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Regional Innovation Research Center supports the Third UN World Conference on Disaster Risk Reduction.



1. Smart Community

1.1 Basic Guidelines for the Reconstruction

On 24th June 2011, Basic Act on
Reconstruction in Response to the Great East
Japan Earthquake came into force.

And based on this act, Basic Guidelines for the
Reconstruction in Response to the Great East
Japan Earthquake was agreed on 29th July
2011.

附則

第四章 復興庁の設置に関する基本方針（第二十四条）

第三章 東日本大震災復興対策本部（第十一条―第二十三条）

第二章 基本的施策（第六条―第十条）

第一章 総則（第一条―第五条）

目次

東日本大震災復興基本法（平成二十三年法律第七十六号）

It was indicated in the Basic Guidelines that the Japanese government will promote “Smart Communities” to afflicted areas.

⑩ Promotion of use of renewable energy and improvement of energy efficiency
(i) [...]
(ii) [...] Introduce “Smart community” and “smart village” which improve energy efficiency as pioneer case in disaster-affected regions. These measures are taken to stabilize energy demand and supply and create leading cases of future smart system. In addition, promote concentration of industries related to renewable energy system in disaster-afflicted regions.

東日本大震災からの復興の基本方針

平成 23 年 7 月 29 日
東日本大震災復興対策本部

⑩再生可能エネルギーの利用促進とエネルギー効率の向上

- (i) 被災地域において、最新型の太陽光発電設備や風力発電設備を設置して行う実証研究を促進する。また、再生可能エネルギーの賦存情報、環境基礎情報の提供等により事業化活動を促進する。
- (ii) 被災地域の中核となる避難用施設など防災拠点等に再生可能エネルギーと蓄電池を組み合わせたスマートエネルギーシステムを導入するとともに、エネルギーの利用効率を高めるスマート・コミュニティ、スマート・ビレッジを被災地域に先導的に導入し、被災地域の電力需給を安定させ、将来のスマートシステムの先行事例として活用する。被災地域への再生可能エネルギーシステムの関連産業の集積を促進する。

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1.2 “Smart Community”

Japanese government’s definition of “Smart Community” (as of 2011).

スマートグリッド・スマートコミュニティとは



エネルギーの消費が増え続ける現代。石油など化石燃料の価格が上昇し、地球温暖化の問題も深刻です。

これからは、太陽光や風力など再生可能エネルギーを最大限活用し、一方で、エネルギーの消費を最小限に抑えていく社会が必要です。



それを実現するのが家庭やビル、交通システムをITネットワークでつなげ、地域でエネルギーを有効活用する次世代の社会システム。スマートコミュニティです。

それでは、2030年のスマートコミュニティを見ていきましょう！

“Hereafter we need to build a community which makes most use of renewable energy such as solar and wind; and at the same time reduces energy consumption. This can be achieved by a next-generation social-system which connects houses, buildings, and traffic system by IT network and uses the energy effectively. Hence the Smart Community.”

(http://www.meti.go.jp/policy/energy_environment/smart_community/about/fallback.html)

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1.2 “Smart Community”

Thus the two pillars of “Smart Community” are:

- Use of **renewable energy**
- Use of energy management system (**EMS**)

(Image on the right from METI Journal, Oct./Nov. 2011)



(Today we see a more refined definition of Smart Community in Japanese government's Basic Energy Plan of April 2014, page 64.)

(2) 地域の特性に応じて総合的なエネルギー需給管理を行うスマートコミュニティの実現

様々な需要家が参加する一定規模のコミュニティの中で、再生可能エネルギーやコージェネレーション等の分散型エネルギーを用いつつ、ITや蓄電池等の技術を活用したエネルギーマネジメントシステムを通じて、分散型エネルギーシステムにおけるエネルギー需給を総合的に管理し、エネルギーの利活用を最適化するとともに、高齢者の見守りなど他の生活支援サービスも取り込んだ新たな社会システムを構築したものをスマートコミュニティという。

1.3 Feed-in Tariff

On 1st July 2012 Feed-in Tariff scheme for renewable energy was launched.

Tariffs and Durations (PV, Wind, Geothermal and Hydro)

Energy source	Procurement category	Solar PV		Wind power		Geothermal power	
		10 kW or more	Less than 10 kW (purchase of excess electricity)	20 kW or more	Less than 20 kW	15MW or more	Less than 15MW
CO ₂	Installation cost	325,000 yen/kW	466,000 yen/kW	300,000 yen/kW	1,250,000 yen/kW	790,000 yen/kW	1,230,000 yen/kW
	Operating and maintenance costs (per year)	10,000 yen/kW	4,700 yen/kW	6,000 yen/kW	—	33,000 yen/kW	48,000 yen/kW
Pre-tax IRR (Internal Rate of Return)		6%	3.2% ^(*)	8%	1.8%	13% ^(**)	
Tariff (per kWh)	Tax inclusive ⁽⁻³⁾	42.00 yen	42 yen^(*)	23.10 yen	57.75 yen	27.30 yen	42.00 yen
	Tax exclusive	40 yen	42 yen	22 yen	55 yen	26 yen	40 yen
Duration		20 years	10 years	20 years	20 years	15 years	15 years

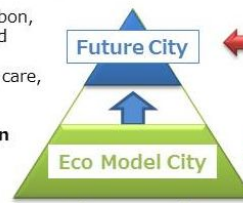


(Images from METI Feed-in Tariff Scheme in Japan, Jul. 2012)

1.4 "FutureCity" Initiative

In December 2011 Japanese government selected eleven proposals as environment-friendly "FutureCity" Initiative of which six were proposals from cities/communities in afflicted areas.

Environment (low-carbon, waste management and nature)
Aging (medical, elderly care, and child care)
Economic growth
International diffusion
Low carbon
Local revitalization



Support advanced models and international diffusion

Indirect support for voluntary efforts by cities

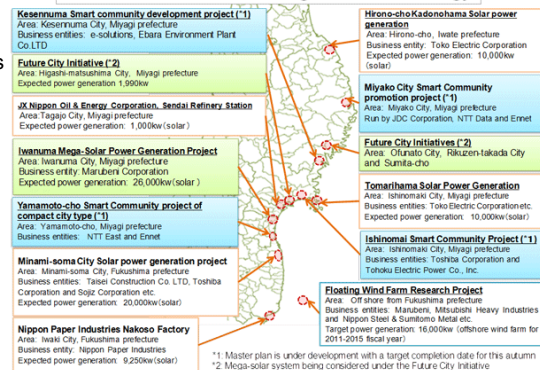
(http://www.japanfs.org/en/projects/future_city/index.html)

"FutureCity": Cities selected in 2011



(<http://www.reconstruction.go.jp/english/topics/2013/03/smart-community-and-future-city-initiatives.html>)

New Initiatives for Promoting Renewable Energy



Jul. 2011

Basic Act on Reconstruction

Basic Guidelines for the Reconstruction

Jun. 2011

Jul. 2012 **Feed-in Tariff**

Dec. 2011 **"FutureCity" Initiative**

New Growth Strategy

Jun. 2010

Smart Community in Tohoku region

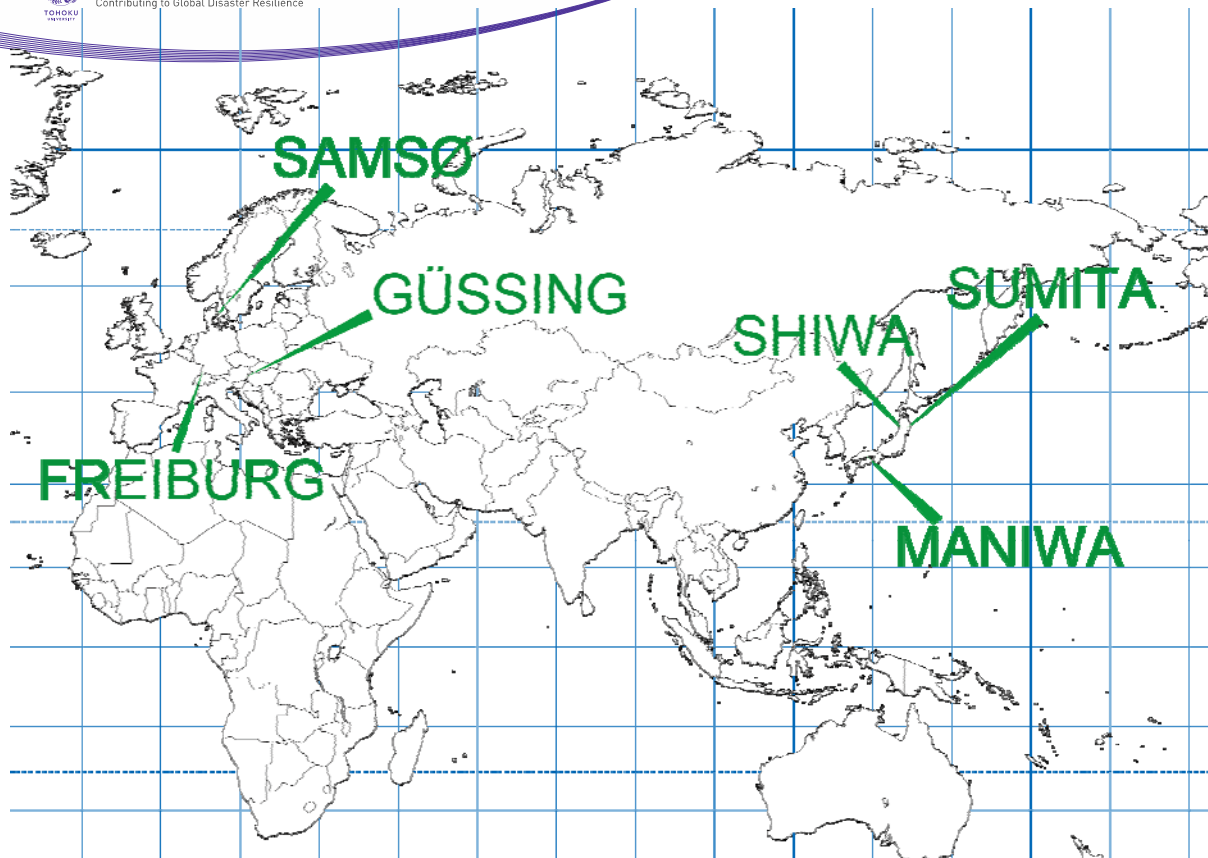
2. Problems of the Present Policy on Smart Community

From 2012 to 2014 we conducted research on examples of communities and cities both inside Japan and outside Japan which were likely to supply a model for Tohoku region.

Contrary to our expectations, our research showed that there were some serious issues concerning the present policy on Smart Community.



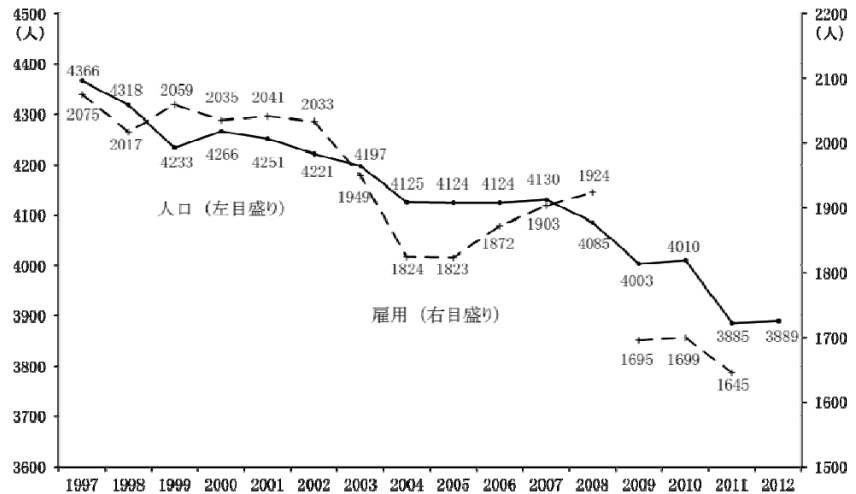
Samsø. Photo by Yutaka Furuya.



2.1 Local Economy (Jobs/Population)

Close study on each cases showed that introducing Smart Community to rural areas in Tohoku is not likely to increase local jobs and population.

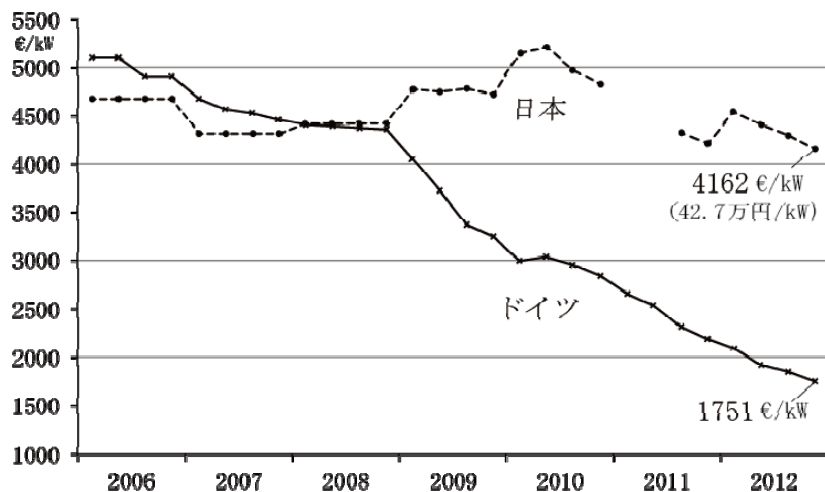
(Jobs and population in Samsø. From 『東日本大震災復興研究Ⅱ』 p. 306)



2.2 Absurdly Expensive Renewables

The tariff introduced in July 2012 was high and was sure to cast hefty burden on the nation. We were very explicit to point out, in November 2012, that this scheme is not sustainable and that this scheme will provoke photovoltaic bubble/burst in the near future.

(Installation price of photovoltaic, less than 10 kW. From 『東日本大震災復興研究Ⅱ』 p. 316)



2.3 Wrong Incentive

Lavish subsidy on renewables makes it very hard to transmit the development of renewable energy from subsidy based growth to market based growth.

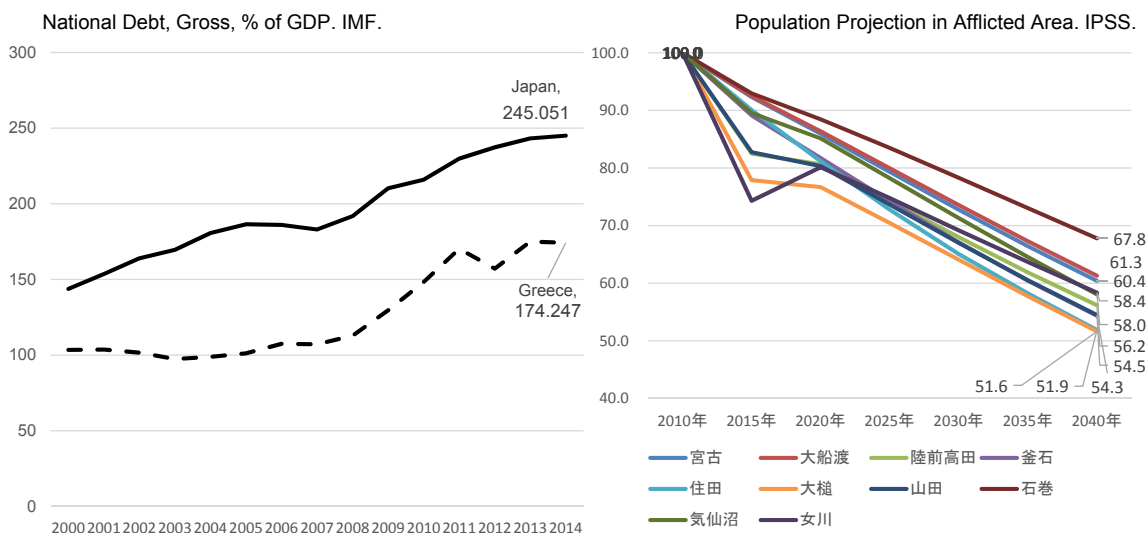
It also gives Smart Communities and FutureCities wrong incentives. The overall plan of Smart Communities/FutureCities tends to get grand; and the renewable energy devices they plan to install tends to be very expensive.



Photo by Yutaka Furuya.

3. Concluding Remarks

3.1 Two Ticking Bombs: Public Finance and Population Decline





3.2 Facing the Reality

The critical issue of restoring communities in the Tohoku region, in our opinion, is not the lack of support.

It is not the support that is wanting. Rather, it is the courage to face the crude future forecast on population and public finance; it is the will to make a plan to reconstruct the community in much smaller scale.



Acknowledgement

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- Professor Nakagawa Shuichi, Meiji University.
- Mr. Shoji Nobutoshi.
- Mr. Chiba Masataka, Miyagi Prefecture.



Tohoku University DRR Actions
Contributing to Global Disaster Resilience

地域発イノベーション事例調査研究報告

東北大学大学院経済学研究科教授 教授
福嶋 路

201503.16



東北大学大学院経済学研究科地域イノベーション研究センターは第3回国連防災世界会議を支援しています。



Tohoku University DRR Actions
Contributing to Global Disaster Resilience

Report on Innovation Case Research Project

Regional Innovation Research Center
Michi Fukushima

2015.03.16



Regional Innovation Research Center supports the Third UN World Conference on Disaster Risk Reduction.



Outline of Report on Innovation Case Research Project

- Collaborative research has been conducted by Tohoku Kasseika Research Center and Regional Innovation Research Center, graduate school of Economics and management, Tohoku University since 2011.
- The purpose of the research is to uncover innovative and promising entrepreneurs' activities in Tohoku area and introduce their stories, philosophy, and way of life to readers.
- We write eleven cases and publish a book including them every year.



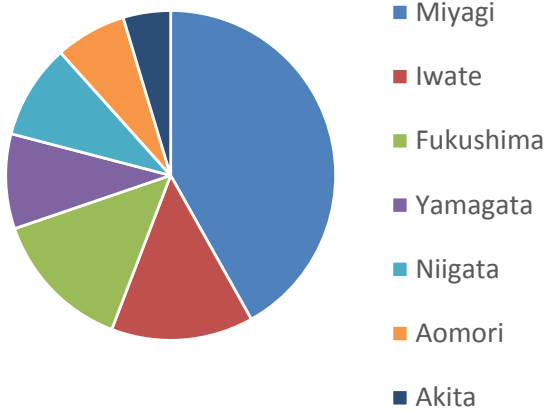
Theme of each volume

- 2011 <Volume 1.> Challenges from Tohoku
 2012 <Volume 2.> Resource exploitation, development, and growth of enterprises in Tohoku
 2013 <Volume 3.> Restoration from the disaster: fundamental strength of Tohoku
 2014 <Volume 4.> Challenges for common sense.

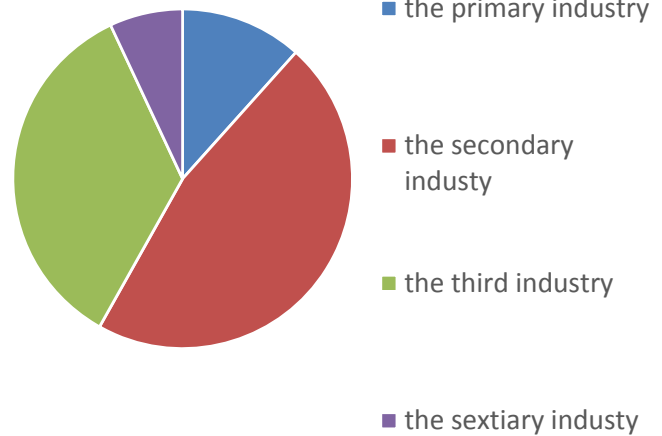


Features of case companies

Location (by prefectures)



Industries



case category

1. New model for the agriculture & fishery
2. Industry revitalization with unique business model
3. Revival of traditional crafts industries
4. Pursuing technological excellency
5. Utilizing regional advantage
6. Living with regional society



1. New models of agriculture & fishery

- Apple firm
 - Agriculture hiring handicapped persons' employment
- Momoura Oyster production Association
 - private companies entering into the fishery industry
- Apple factory Japan
 - colorfast apples sold in vending machines
- GRA
 - high-value-added-strawberry through R&D and branding



2. Industry revitalization with unique business model

- Butai firm (providing precut vegetable)
- Seigetsu-ki
(new concept for funeral business)
- Don Don up
(second hand clothing store with innovative pricing)
- Yamani-syouyu (New way of selling soy sauce)
- Big Mama
(mending service for urban busy people)



清月記



3.Revival of traditional crafts industries

- Iwachu (internationalization of Nanbu-tekki)
- Nanbu-Bijin(internationalization of Japanese Sake)
- Wired beans (introducing IT technology to connect traditional craft and consumers)



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4. Pursuing technological excellency

- Toyo system (battery inspection equipment)
- Spiber Inc.(manufacturing artificial spider fiber)
- NEC personal computer, Yonezawa branch
(the lightest note PC in the world)
- Fumin (innovative glass coating technology)
- Yushin (new type of pouch in dispenser)



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5. Creative Utilization of regional resources

- Mobby Dick Inc. (innovation of sweat suits)
- Mr. Shu Kakuta
(producer of Aomori snow drifting tour)
- Aizu-Fuji Kako (lettuce production in former semiconductors manufacturing facility)
- Habataku Co. (exploitation of rural resource)



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6. Live harmony with community

- Izunuma-Nosan (community- based agriculture)
- Ujie-super (community- based supermarket)
- Hashimoto Doro (innovative way of clearing rabbles)
- Takada Driving School

(providing infrastructure to the region)



Case: Ono Foods Co., Ltd.

- This company belongs to seafood processing business, Kamaishi in Iwate prefecture.
- Before the earthquake, their products are sold through a wholesaler accounted for about 65% of sales figures, and sales to individual customers accounted for 35% of sales figures.

Total amount of suffering in three damaged prefecture (billion yen)

	Iwate	Miyagi	Fukushima
Fishery harbor	285.9	424.2	62
Aquaculture facilities	13	48.7	0.2
Fish Processing facilities	39	108.1	6.8
Other facilities	51.2	45.7	13.9

Damage of Ono food Co.Ltd. (1)

- When the disaster occurred, there were two plant buildings on either side of the head office building at Kamaishi, as well as another plant in Otsuchi which had just been built at a cost of 270 million yen and began operating on February 25, 2011.
- Otsuchi Plant had been completely washed away, and the two plants at Kamaishi that were suffered heavy damages (total 450 million yen loss).

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Otsuchi plant: before and after March 11 in 2011



Feb.25 in 2011



After

Ono's seafood distribution center destroyed just 15 days after its grand opening

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Damages Ono food Co.Ltd. (2)

- Of their 102 employees 12, two died. All employees were laid off with the exception of six workers needed to continue business operations.
- Customers of the industry sales business had switched over to other suppliers. In addition, there were dealers who switched to overseas suppliers due to yen appreciation.

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Revival (1)

- After the disaster, a huge number of e-mails from the users of the mail-order services of his company reached him immediately after the earthquake, expressing their support for his operations.
- This support made him determined to rebuild the business of his company and served as the main motivation to achieve an early resumption of operations.
- After the disaster, Ono Foods changed their business structure; focused on and expanded its mail-order business of frozen boiled and grilled fish.

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Revival (2)

- Applying Government-Subsidized Project for the Restoration and Building of Small-and-Medium Sized Enterprises' Group Facilities and raising fund.
- Being helped by YAMATO TRANSPORT CO., LTD., picking works were outsourced.
 - Later it turned out that outsourcing was good strategy. Outsourcing made it possible for Ono foods to respond flexibly to rapid order growth.

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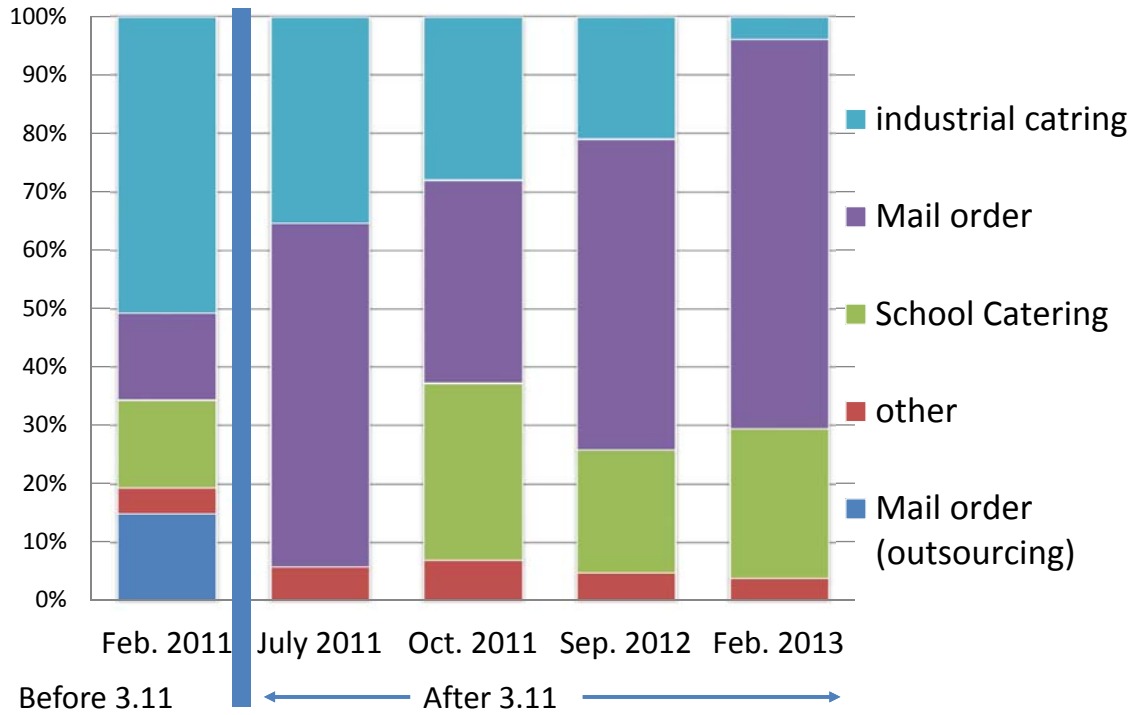


Revival (3)

- Specialists were dispatched to the company
 - A Toyota retiree was dispatched to teach quality control.
 - Specialist of finance and marketing were sent introduced by Organization for Small and Medium Enterprises and Regional Innovation.
- New Customer Information Control System was introduced with the help of subsidy.

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Proportion of sales by business



Ono Foods Co., Ltd. Online shopping





Observation

- Restored to its former states \neq Revival
- Leveraging management resources that flow in the regions after the disaster.
- Revival ability has been nurtured for a long time.
 - Only instant force is not enough to adjust to such turmoil. Continuous management efforts are needed.
- Having large & extended human network would be helpful.

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Conclusion and further challenge of our project

- There are many hidden innovative companies in Tohoku area. Tohoku is not a “barren area for entrepreneurs”.
- It is our continuous tasks to uncover firms with high potentials, introduce to public, and encourage entrepreneurship in Tohoku area.

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Tohoku University DRR Actions
Contributing to Global Disaster Resilience

Regional Innovation Producer School (**RIPS**)

KWEON Ki-Chul

**Regional Innovation Research Center
Graduate School of Economics and Management
Tohoku University**

2015. 03. 16



東北大学大学院経済学研究科地域イノベーション研究センターは第3回国連防災世界会議を支援しています。



Tohoku University DRR Actions
Contributing to Global Disaster Resilience

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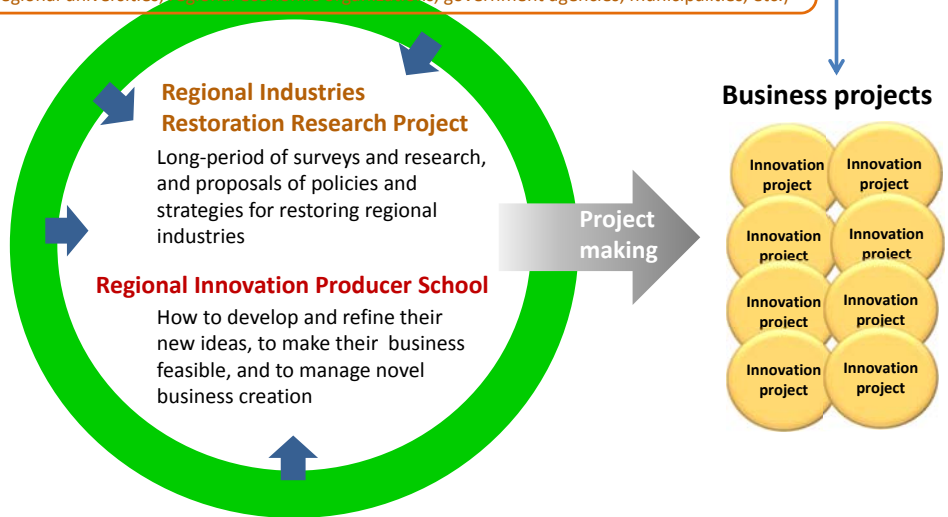
- 1. Regional Industries Restoration Support Project**
- 2. Purpose of RIPS**
- 3. Brief History of RIPS**
- 4. Overview of RIPS**
- 5. Curriculum of RIPS**
- 6. Supporting Activities after Graduation**
- 7. Learning Activities after Graduation**

1. Regional Industries Restoration Support Project

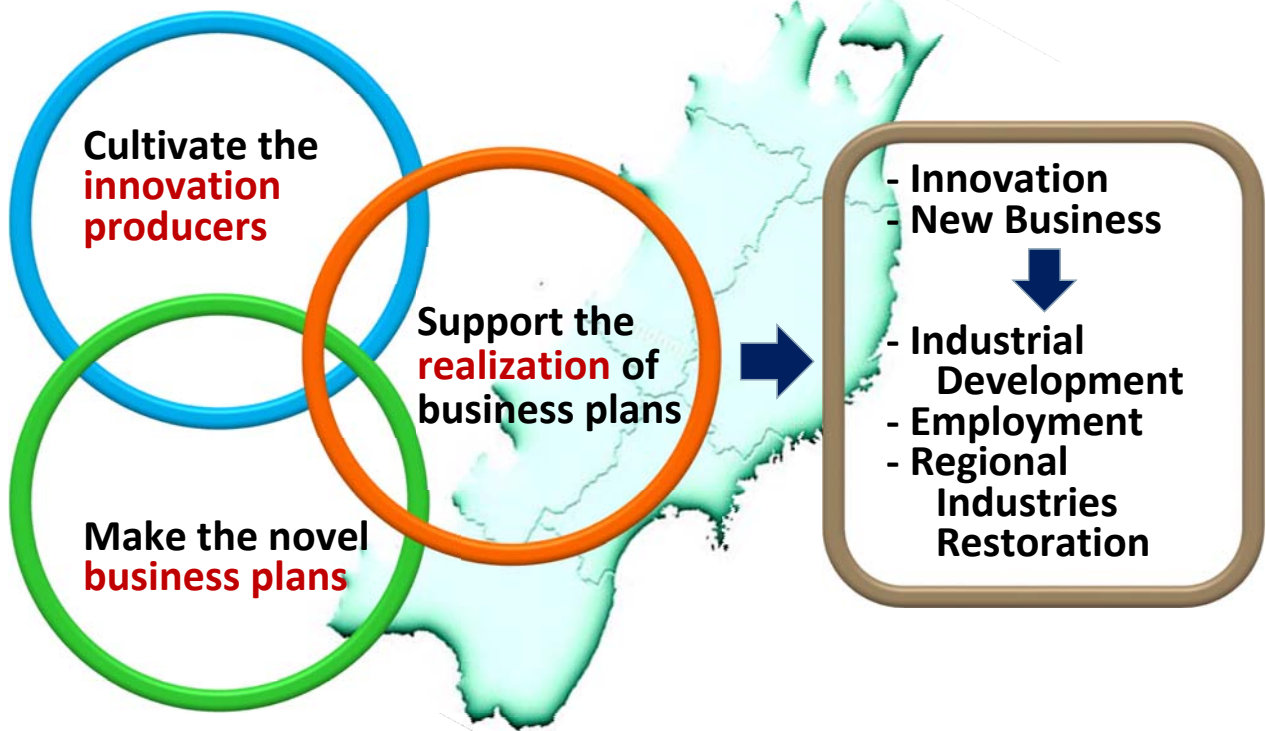
To provide continuous supports to the restoration of industries/communities

- Investigating the progress of reconstruction and publishing policy proposals and information
- Providing training programs designed for next-generation of business persons in order to develop their abilities of making innovation happen

Systematically coordinated collaboration among organizations supporting projects engaged in the reconstruction of regional industries
(Regional universities, regional economic organizations, government agencies, municipalities, etc.)



2. Purpose of RIPS



3. Brief History of RIPS

The Great East Japan Earthquake

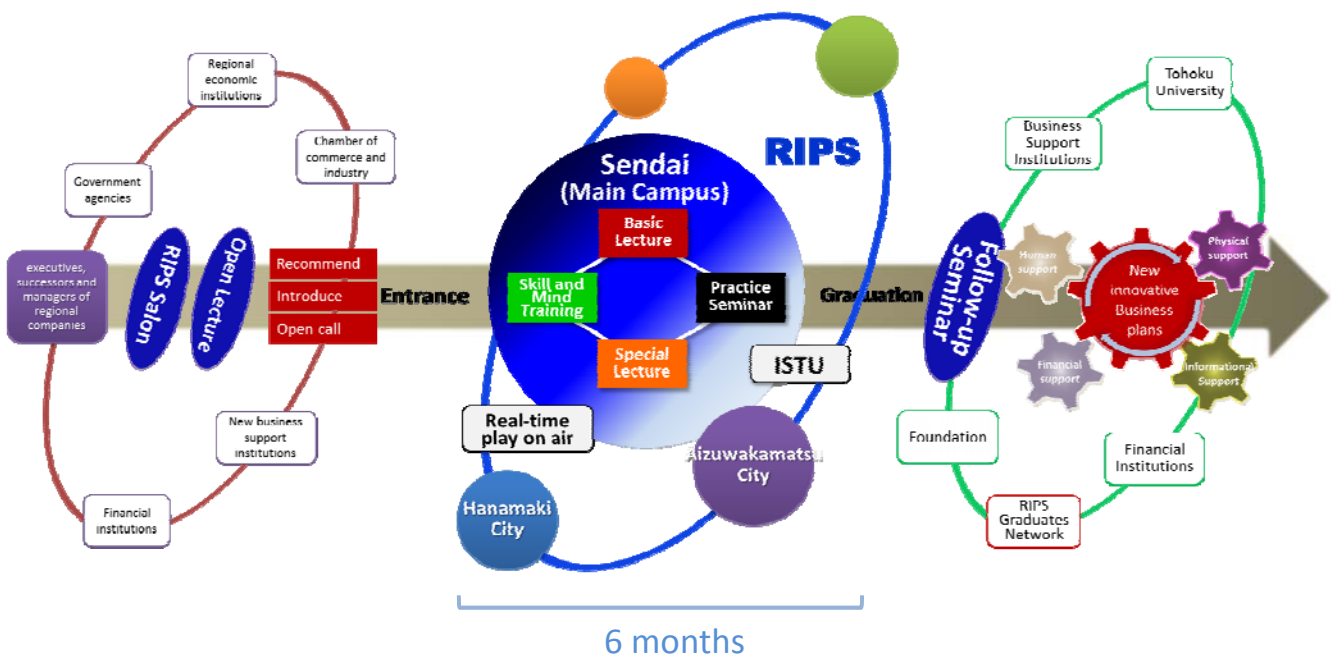
2010
A field research on cultivation of management personnel in Japan

2011
Study on RIPS Curriculum (6 months)

2012
Trial run on RIPS

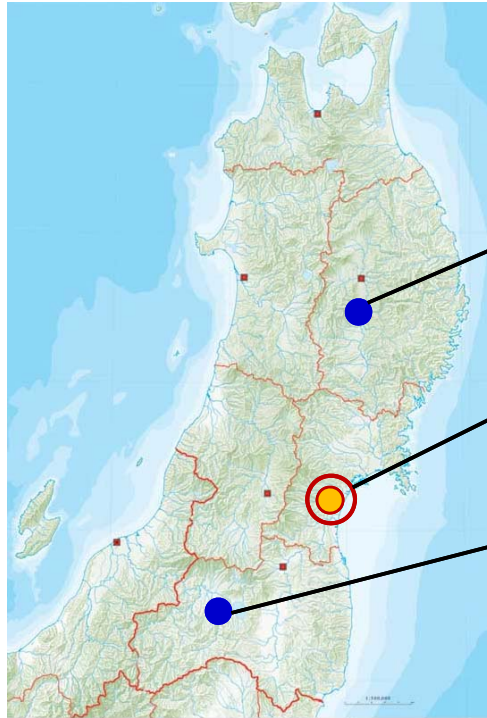
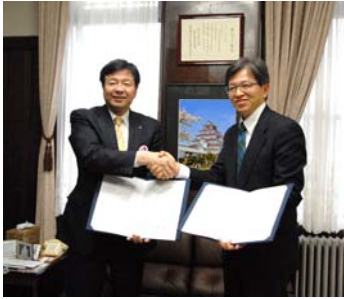
2013
Opening of RIPS

4. Overview of RIPS





Campus and Two Branches



Hanamaki
IWATE

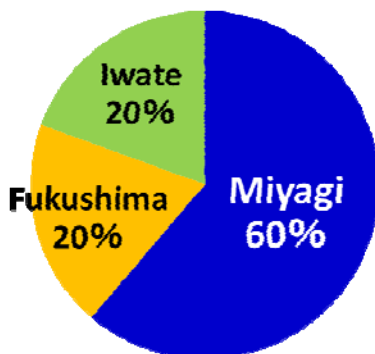
Sendai
(Main Campus)
MIYAGI

Aizuwakamatsu
FUKUSHIMA

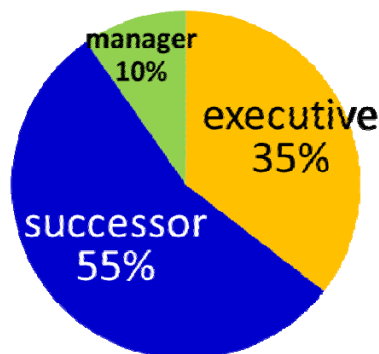


The Attributes of Students

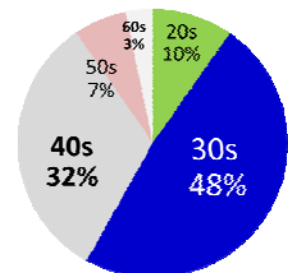
AREA



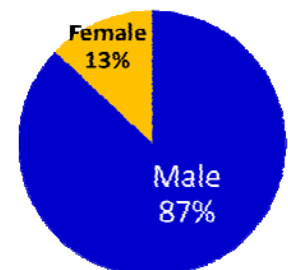
POSITION



AGE

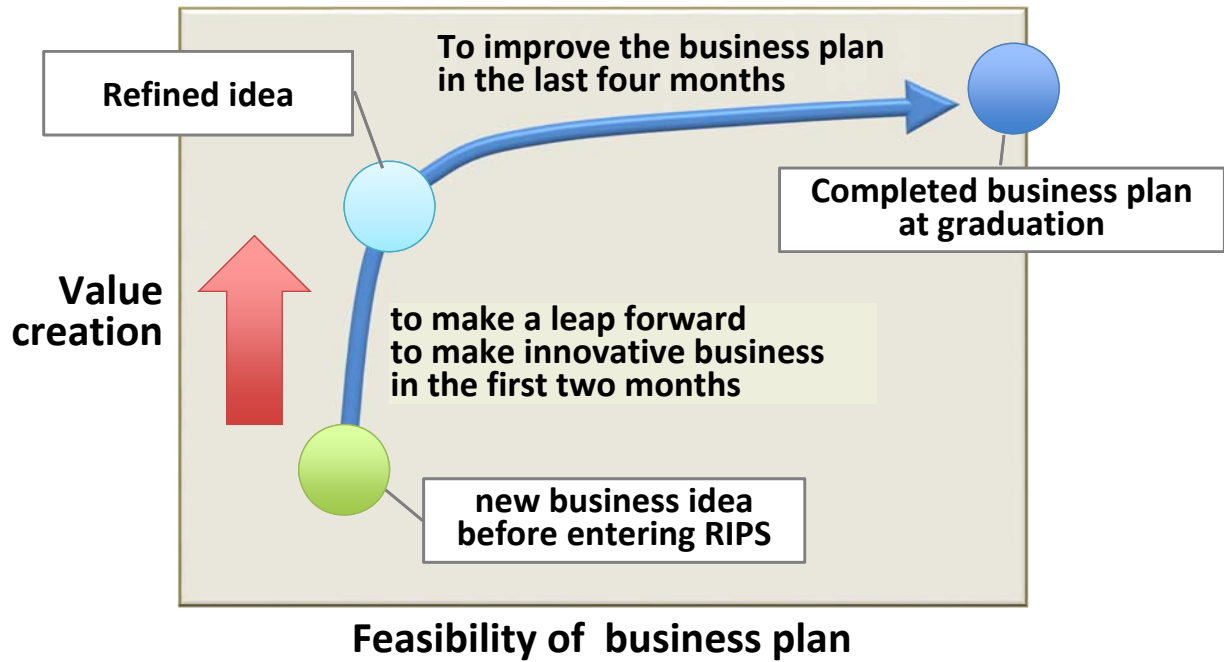


SEX

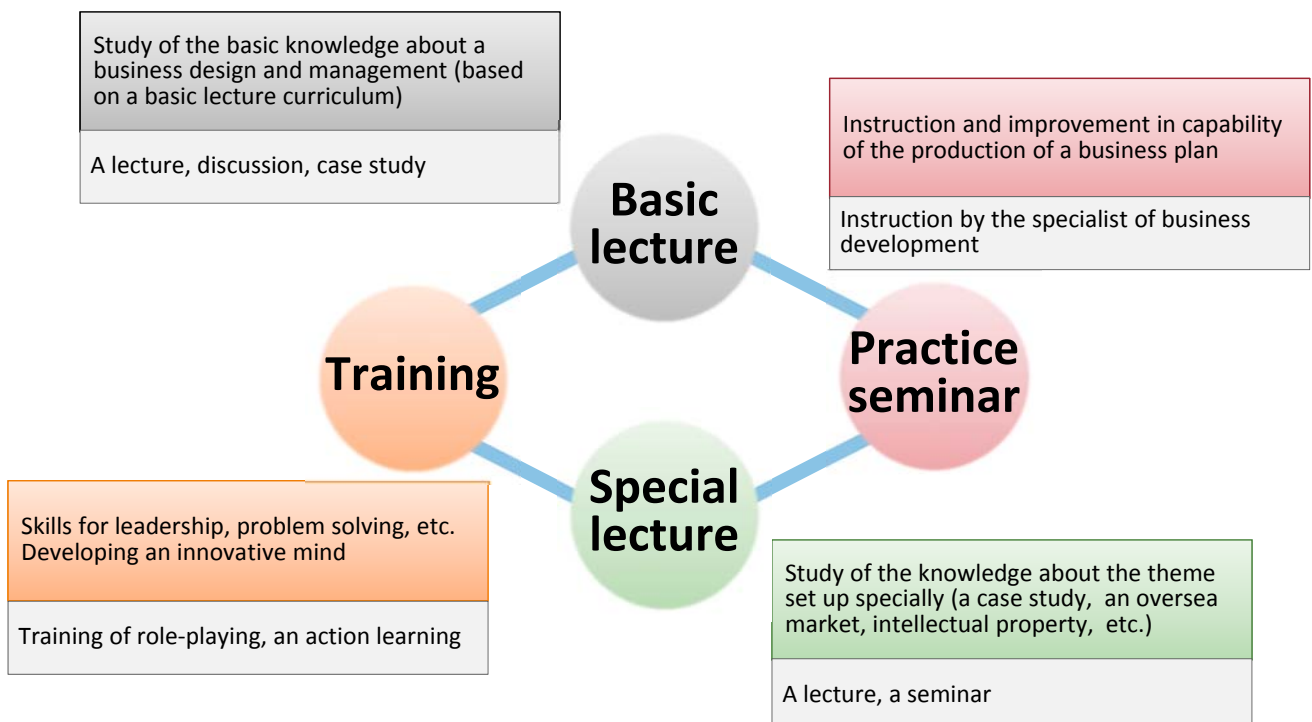


31 students in 2014

5. Curriculum of RIPS Policy



Curriculum of RIPS

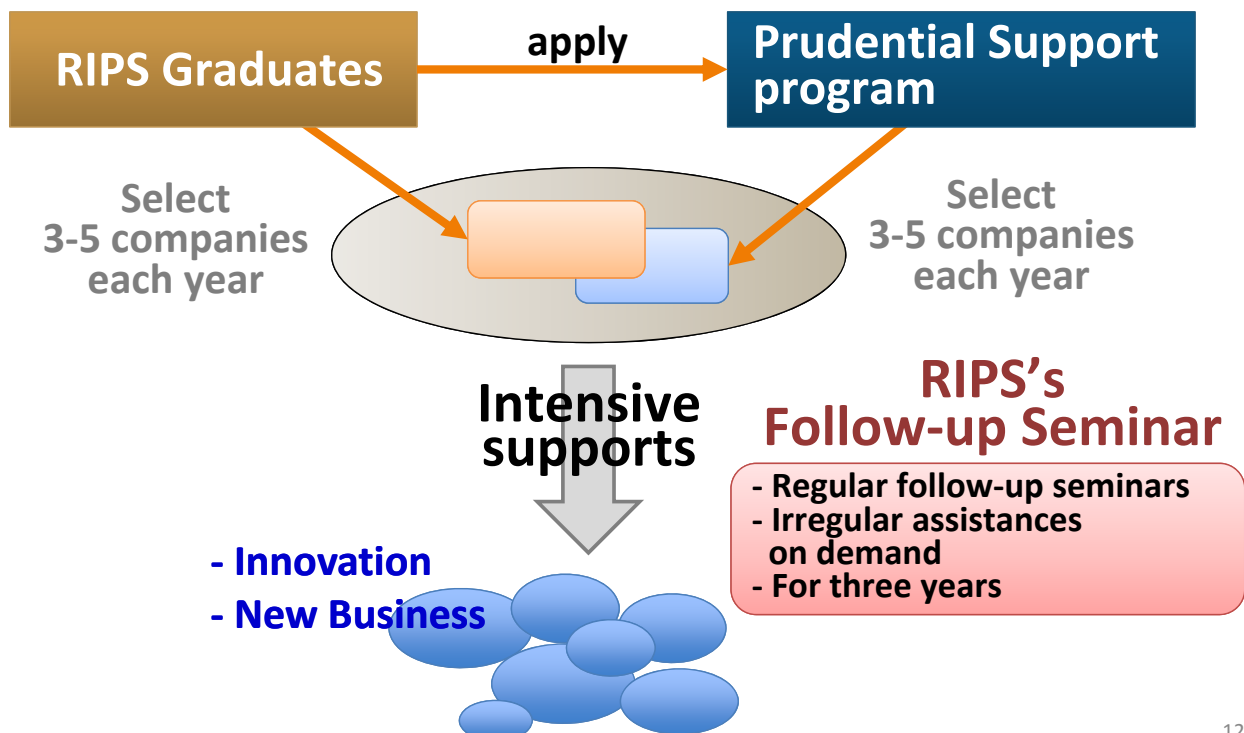


Business Plan Presentation



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6. Supporting Activities after Graduation



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The Prudential Support Program



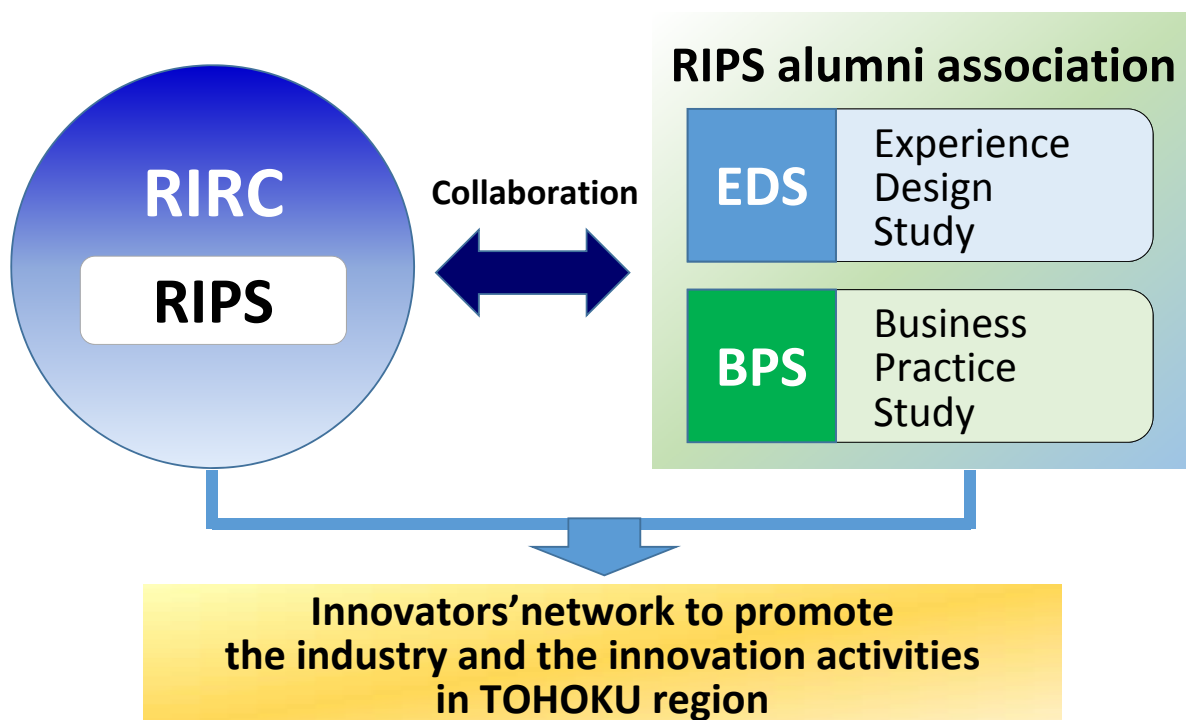
Prudential Foundation provides up to **\$1M USD** in total to support the program for three years from 2014 .

- **Funds for Businesses:**
\$300,000 each year
(as the grants to realize new business plans)
- **Funds for RIPS (RIRC):**
\$17,000 each year
(Expense for supporting and reporting activities)

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7. Learning activities after graduation



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Thank you

