Title	Reconstruction project for tourist resort after disaster : Social system design for accelerated disaster recovery
Sub Title	
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Abstract	In Japan, there are many many risk of a natural disaster, for example, earthquake, volcano, typhoon etc. And these risks are aiming tourist resorts. But they don't have continuity plan, so after disaster, they cannot reconstruct. If the disaster happened, tourists don't visit there. Still, in Unzen, after the volcano eruption tourists are very decrease. Then, we designed "Reconstruct plan of Tourist resorts". First, we spotted Hakone because there are very high risks of disaster (earthquake and volcano eruption) and it is very famous and popular resort. Next, we analyzed by ALPS method and thought plan of fitting Hakone. See also 4. As a result,"Hakone FAN CLUB". Instead of Fan club member pay for annual membership fee, they are returned service and privilege of Hakone's hotel and restraint, museum etc. (Of course, these services's value is more than annual membership fee of FAN CLUB.) In this way, they can make increasing the tourists in the usual; it leads to reinvigorate local economy. Then, if the disaster happened, FAN CLUB members to go there as a volunteer, so Hakone is reconstructed very very quickly, we thought. (FAN CLUB office request volunteer for FAN CLUB member under FAN CLUB list.) If it has been early reconstruction, a number of tourists recover. FAN CLUB privileges are changed your place own, this plan can be used in the whole Japan. We expect that this plan can be spreading rapidly by social network.
Notes	Student final reports Group 2
Genre	Research Paper
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Group 2

Group 2's Theme Proposed by Tokio Marine & Nichido Risk Consulting Co. Ltd.

Theme 11:
Social system design for accelerated disaster recovery

Tokio Marine & Nichido Risk Consulting Co. Ltd.(TRC)
Harumi Yashiro <h.yashiro@tokiorisk.co.jp>, Ryu Miyamoto <ryu.miyamoto@tokiorisk.co.jp>

Recent earthquakes highlight the issues that accelerated disaster recovery needs not only hardware side but also software side like a local economy.

Example issues:

1. Sluggish of self & mutual help
2. Conflicts of interest
3. Local economy
4. Allocation of support by government

Planning for Post-Disaster Recovery ; there is a need for governments to issue previously described.

Key Words:

✓DCP (District Continuity Plan)

✓Grand Design for disaster reduction

✓Resiliency

Human damage:
Death Max **11 thousand**
Refugees Max **7 million**
Economic losses :
Direct loss: 66.6 trillion
Indirect loss: 45.2 trillion
Total losses: **111.8 trillion**

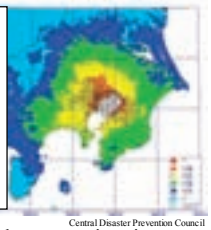

Fig.1:Earthquake damage estimation
(Example of Tokyo Metropolitan Earthquake)

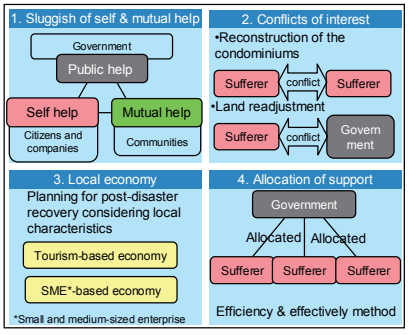

Fig.2:Example of disaster recovery issue

ALPS Final Report 2010

Group 2

PROJECT TITLE:
“Reconstruction Project for Tourist Resort after Disaster”

Theme:

“Social system design for accelerated disaster recovery”

Proposer Organization: Tokio Marine & Nichido Risk Consulting Co. Ltd.

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Reconstruction Project for Tourist Resort after Disaster

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1. Executive Summary

In Japan, there are many many risk of a natural disaster, for example, earthquake, volcano, typhoon etc. And these risks are aiming tourist resorts. But they don't have continuity plan, so after disaster, they cannot reconstruct. If the disaster happened, tourists don't visit there. Still, in Unzen, after the volcano eruption tourists are very decrease. Then, we designed "Reconstruct plan of Tourist resorts".

First, we spotted Hakone because there are very high risks of disaster (earthquake and volcano eruption) and it is very famous and popular resort.

Next, we analyzed by ALPS method and thought plan of fitting Hakone. See also 4. As a result,"Hakone FAN CLUB". Instead of Fan club member pay for annual membership fee, they are returned service and privilege of Hakone's hotel and restraint, museum etc. (Of course, these services's value is more than annual membership fee of FAN CLUB.) In this way, they can make increasing the tourists in the usual; it leads to reinvigorate local economy. Then, if the disaster happened, FAN CLUB members to go there as a volunteer, so Hakone is reconstructed very very quickly, we thought. (FAN CLUB office request volunteer for FAN CLUB member under FAN CLUB list.) If it has been early reconstruction, a number of tourists recover.

FAN CLUB privileges are changed your place own, this plan can be used in the whole Japan.

We expect that this plan can be spreading rapidly by social network.

2. Table of Contents

3. Problem Statement

Figure 3.1 shows that there is a high risk of earthquakes and volcano eruptions in Japan. And this figure also shows that many tourist resorts are exposed to the risk. As we will describe “interview” in chapter 4, these tourist resorts don’t have continuity plans. If an earthquake happens, a tourist resort would have difficulty, because tourists wouldn’t go to the tourist resort.

Among these risky tourist resorts, we focused Hakone tourist resort. Hakone tourist resort serves as a prime example, because this resort has a high risk of earthquake and volcano eruption and Hakone is a popular tourist resort. Figure 3.2 shows that Hakone is one of the highest risk areas in Japan.

We assume that Hakone will become the prototype of tourist resorts continuity plan and the continuity plan of Hakone tourist resort will be applied to most tourist resorts of Japan.

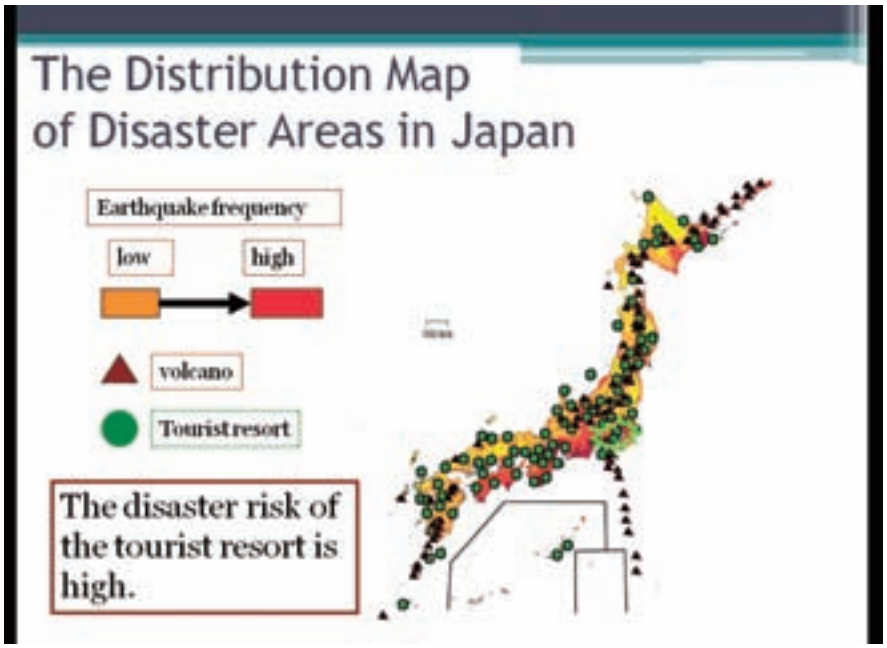


Fig 3. 1　the distribution map of disaster areas in Japan[1][2]

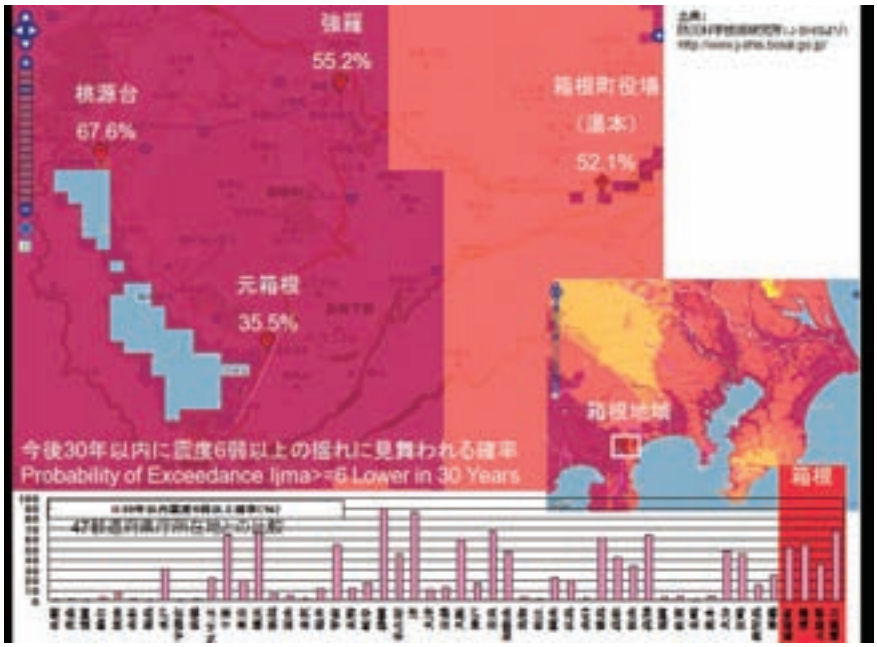


Fig 3. 2　Probability of Exceedance Ijma>=6 Lower in 30 Years[3]

4. Analysis and Discussion of ALPS Methods

4-1. Scenario Graph

In Scenario Graph, we discussed about TRC and other stakeholders considering “Who, What, Where, When, Why, How”. However, we have concretely understood neither "Why" nor "How" yet at this point. So, we discussed “Who, What, Where, When”.

In Hakone, at disaster, Resident's rescue and life base's being likely being likely to become a focus as a result of the discussion became clear. Therefore, the scenario graph became the one that the focus was addressed to the resident as follows.

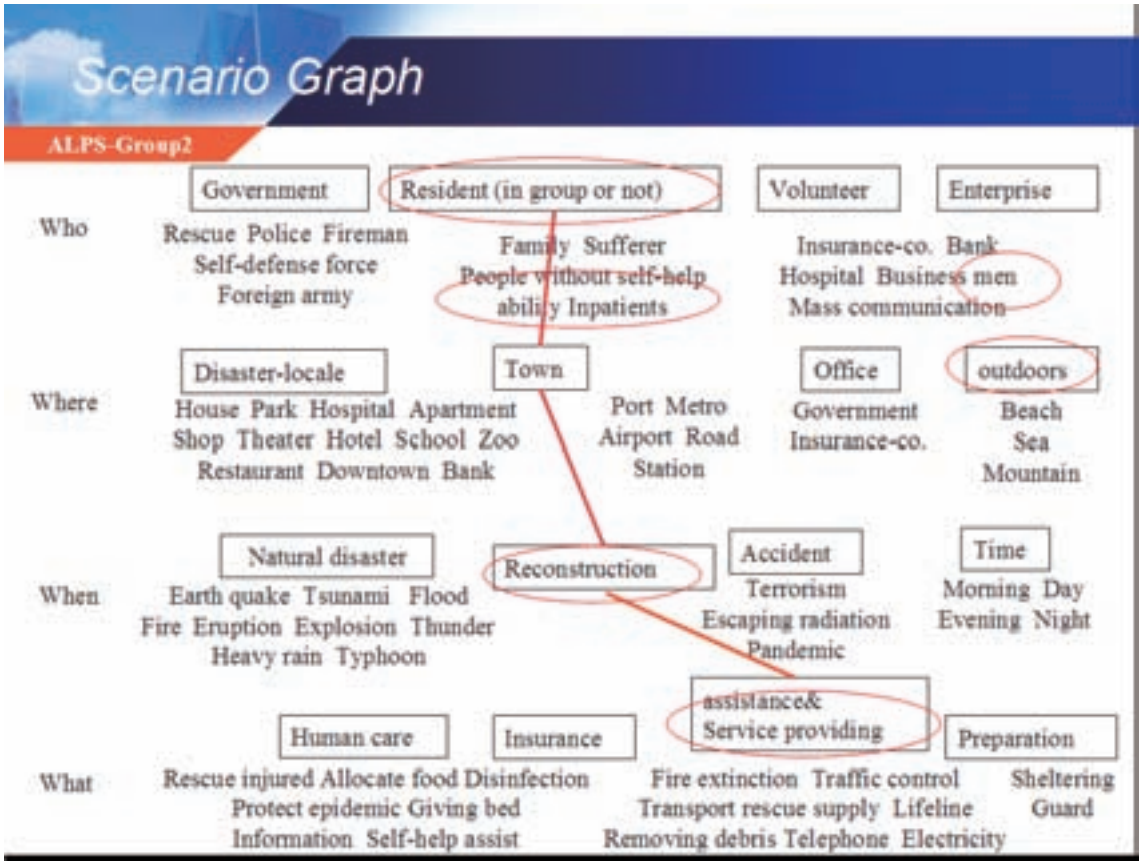
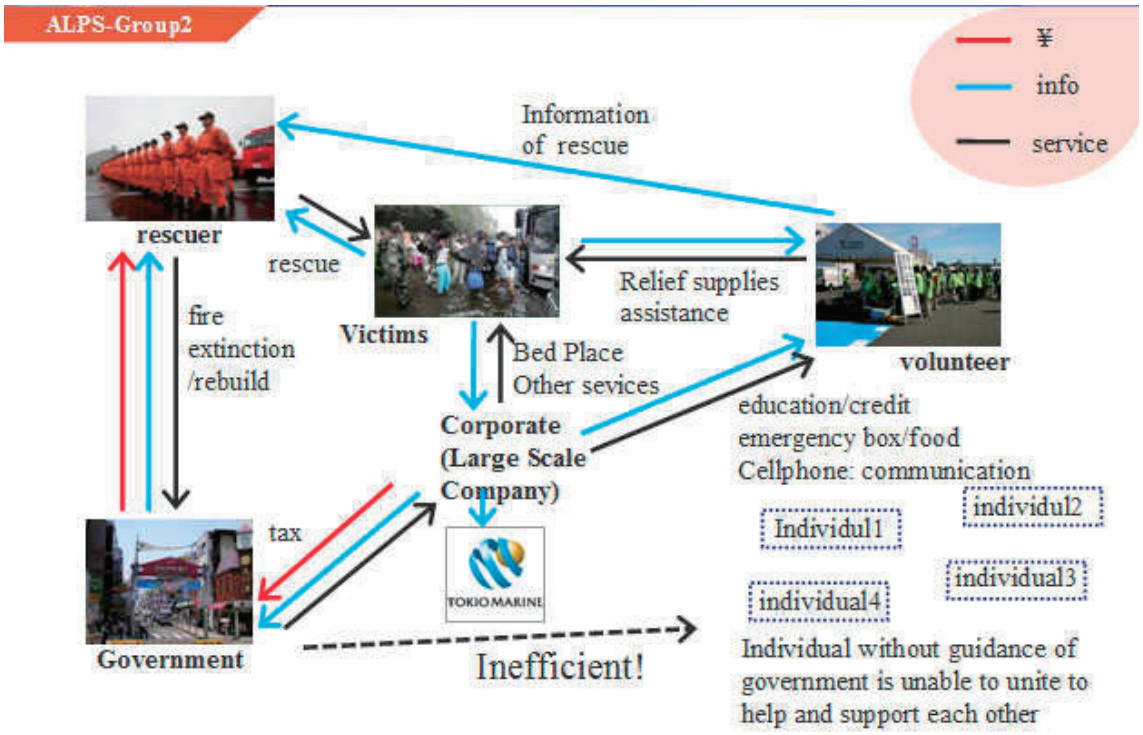


Fig 4.1 Scenario Graph

Here, the resident's life is a point.

4-2. CVCA

CVCA as an important tool for us to analyze our business model was playing a critical role in initial step of our works. By means of CVCA, we could enumerate all stakeholders involve in our business model and confirm the critical one in our business model as soon as possible. For example, because our business model is to manage to design a BCP for Hakone and Hiyoshi, we had discussed all units which possibly affect our business model in two situations--with BCP or without BCP. Comparing these two models turned out the importance of BCP for local government, company and people in the dangerous areas.



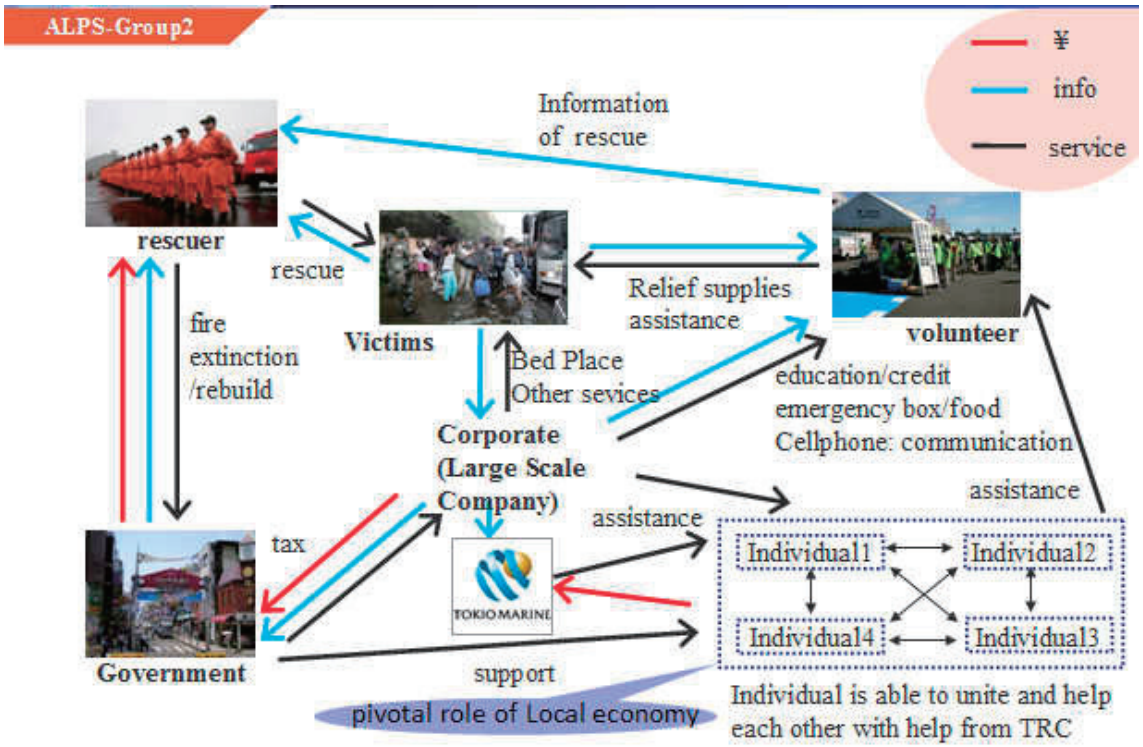


Fig 4.2 (a) CVCA (initial version)

In addition, CVCA was also progressing as our project developing. In our case, the fan club which was not showed in the first version of CVCA was lying in the middle and controlling everything of our business model in the last version of CVCA. Besides fan

club, we also enumerated other important units in our model. For instance, the local hotel, government, database of volunteer and etc. and also we defined the role of TRC again. It was the one design and supports the whole system. CVCA was essential for us to prepare our works for next step.

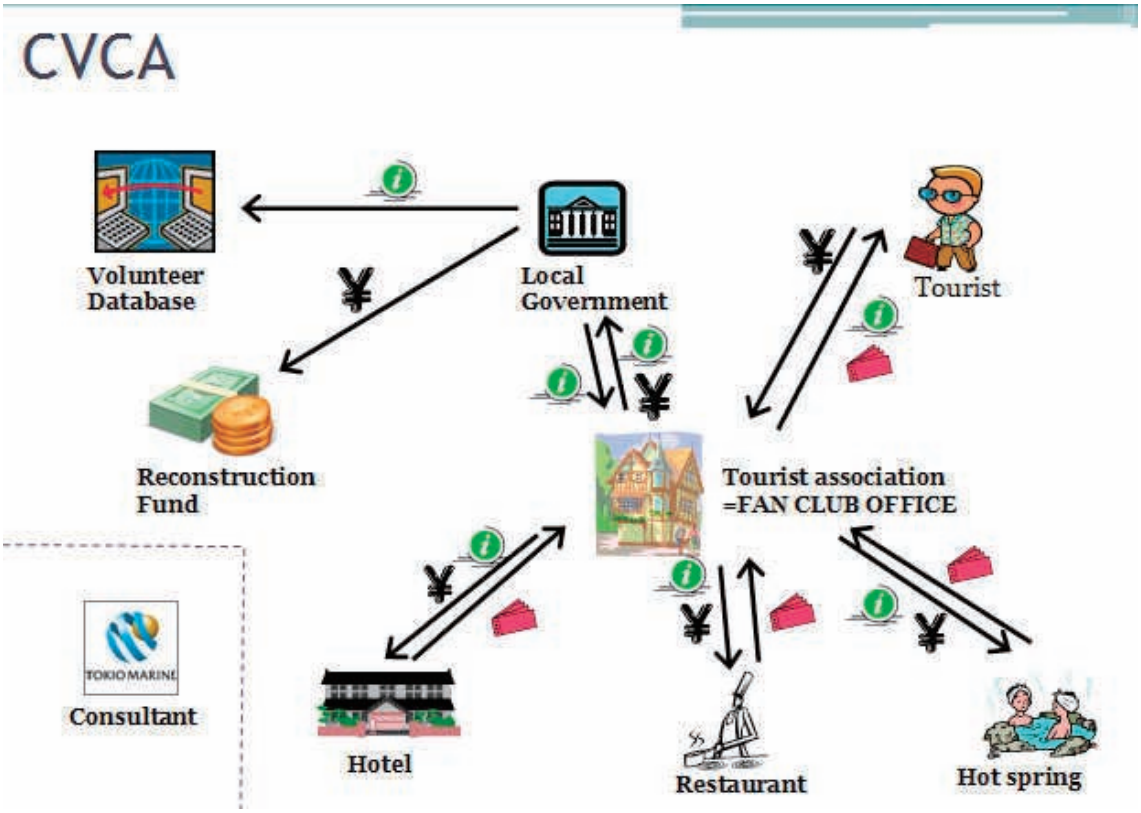


Fig 4.2 (b) CVCA (last version)

4-3. OPM

When it comes to design our business model, we had to confront a verity of issues such as process, functions and so forth. OPM is a tool that leaded us to analyze system of our business model by different levels. As we know, BCP is a project that different from some systems which including amount of physical objects. Through OPM, however, we could decompose our system, especially the information and services that could be provided in our system. What are the limits of our system to support our customers? What are the functions of our system to meet our customers` requirements? We could find the answers by OPM.

In our case, the main function of our system was to support and help the local victims while reconstruct the local hardware when terrible disasters happen. The TRC was regarded as command for the purpose of making and controlling all plans and works, the achievements from TRC would form core function of our system.

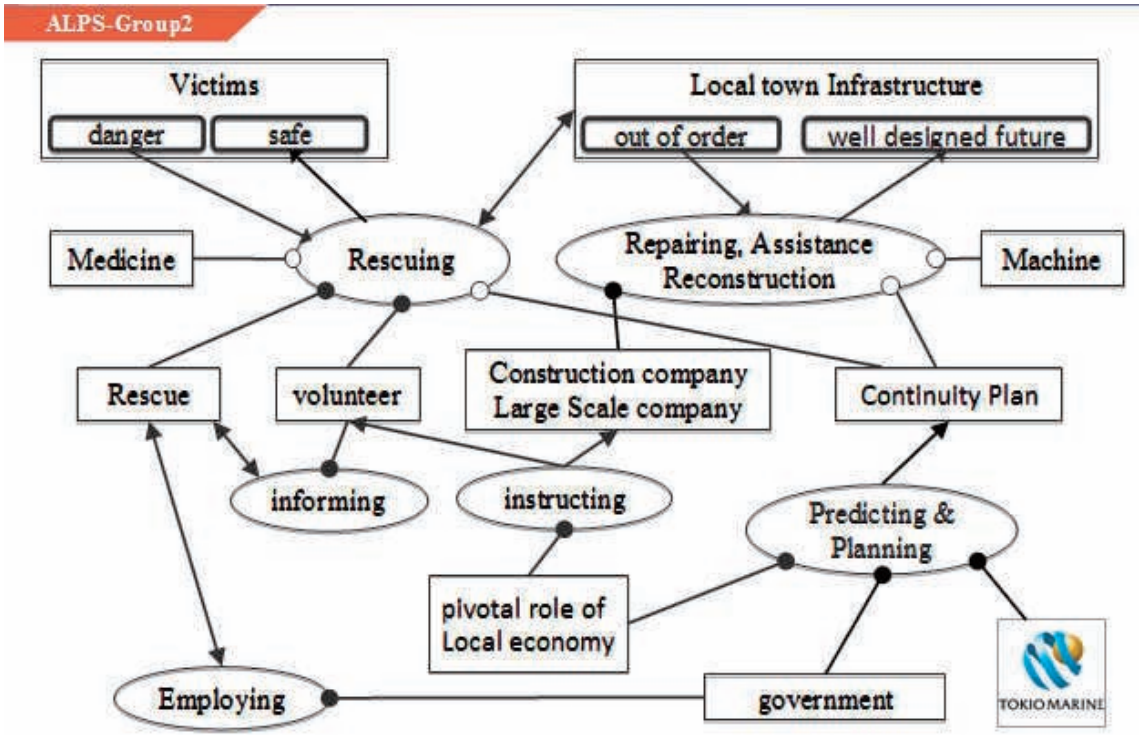


Fig 4.3 OPM (level-0)

4-4. To By Using

We discussed about future of Hakone through disaster. In “To”, we thought that repairing and reconstructing quickly after disaster of local economy is most important.

Then, in “By”, as a result of discussion of solutions, we thought that promotion sustainable development of the local industry is necessary.

Finaly, “Using” is our solution, we made solution of a fan club with a fund and volunteer database.

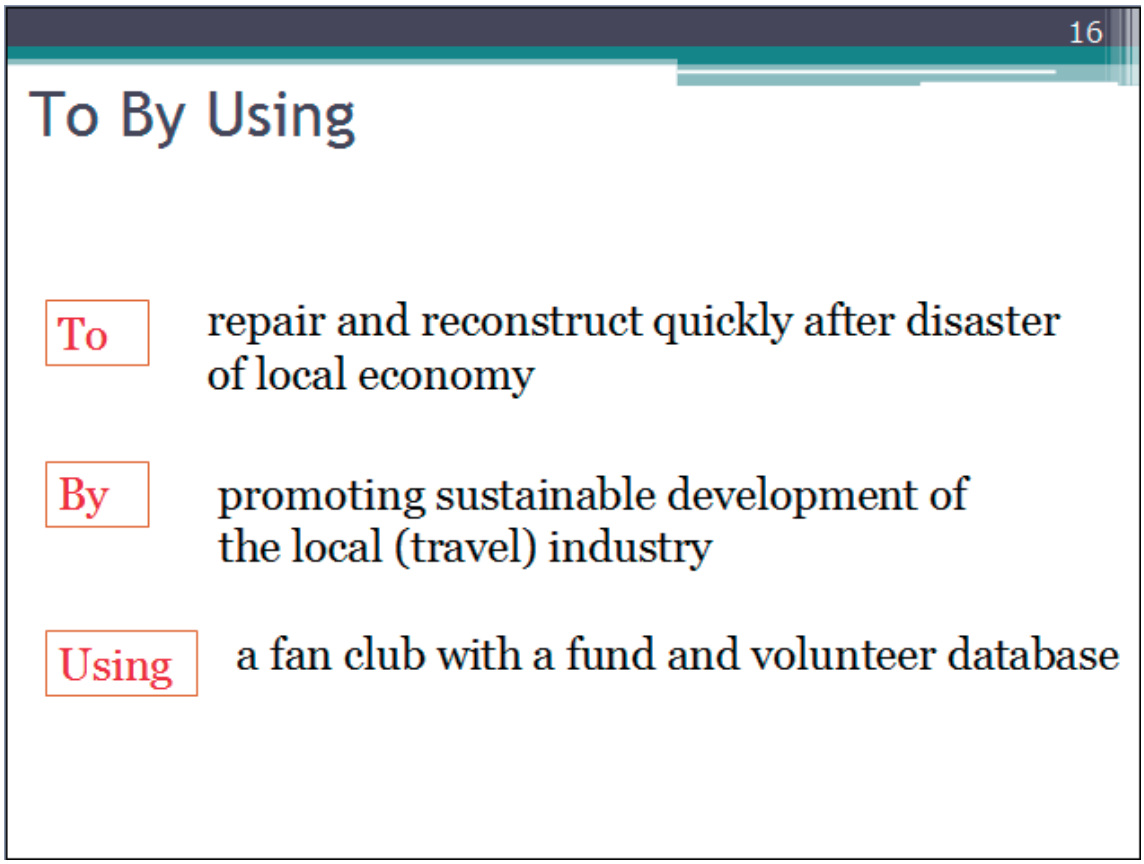


Fig 4.4　To By Using

4-5. VOX

System design has to do with integration of different factors from different areas. That requires us to analyze information and data from different areas about technology, market, society, and etc. in fact, it is impossible to take account of all factors in our case. Therefore, we chose some key points to focus on in order to design the best model for our customers.

4-5-1. voice from our customers and users in target area

In our case, the most importance suggestions were from TRC by which we confirmed main method and customers of business model. Different from systems of other groups, our model tended to be a concept that transfers disasters to chance for new development.

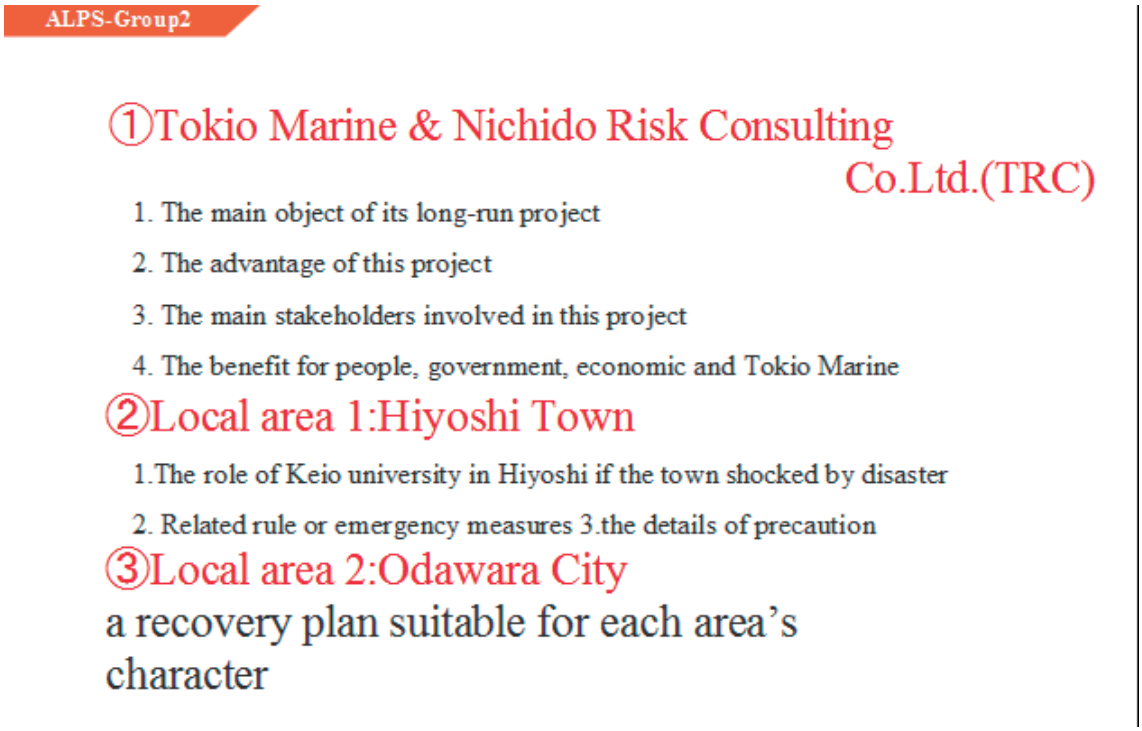


Fig 4.5 Vox 1

4-5-2. voice of other existed business model

Based on Vox, we changed our ideas and provided much more new ideas and concepts. We also verified availability and recognized limit of our business model. the fan club could attract more tourists as well as fan club of Disney Land while guide volunteer when disaster happen.

4-6. Use Case

We think that each stakeholder is in what situation.

Based on customers` requirement, We have brainstormed recollected a concrete phenomenon and brought it together.

When thinking about the system, we think about all stake-holder's situation.In addition, we were able to understand for us to need what activity and the preparation so that we might answer the customer requirement.

4-7. Interview & Observation

– Where did you visit? What have you learned?
How did it help or change your project?

We could understand that they didn't have Revival plan though Hakone is a danger zone. Then, under the present situation, Revival plan is introduced in Big enterprises as BCP(business continuity plan), but is not introduced in municipality.

So, though Hakone area almost depends on tourist in Economy, they don't have

measures plan for tourism industry in disaster.

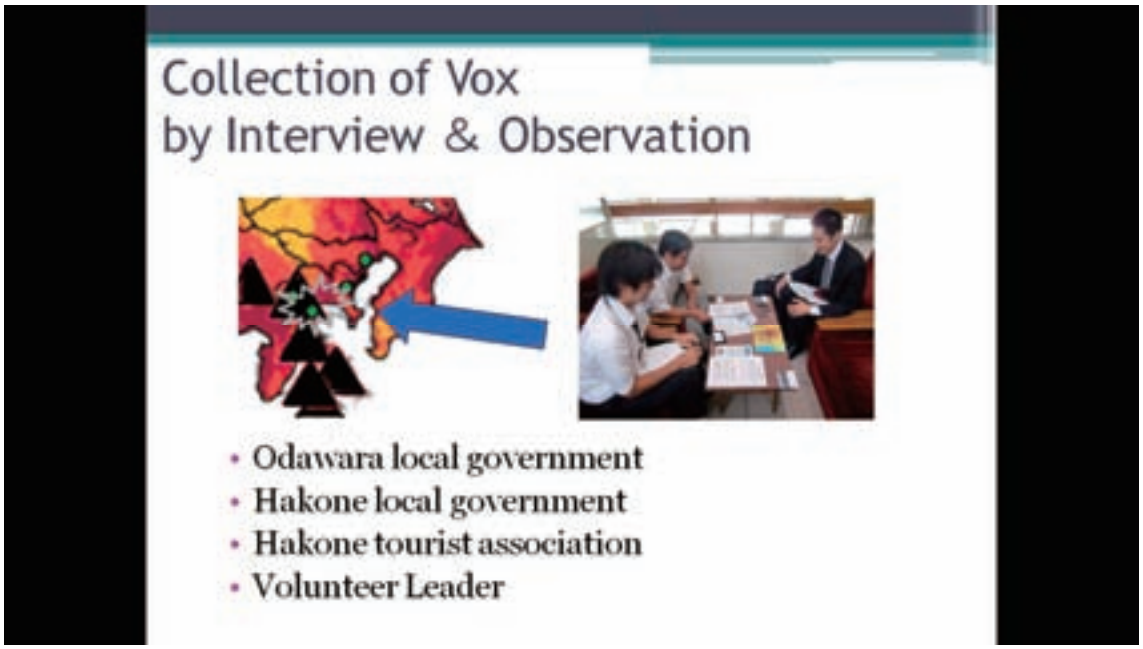


Fig 4.6　Interview & Observation

4-8. Morphological Concept Generation based on Functions

4-8-1. Context

We consider solutions idea for sub-functions about Use Case. Sub-function chiefly aims at both of the life rescue, Quick Repairing of building, and □Development of tourism industry.

4-8-2. Result

We considered a lot of solutions ideas. As a result of Morphological Analysis, it became hard respect like road works and the event holding soft sides about measures.

4-8-3. Next step

We compare the importance of the solutions idea and cost-worth by using QFD.

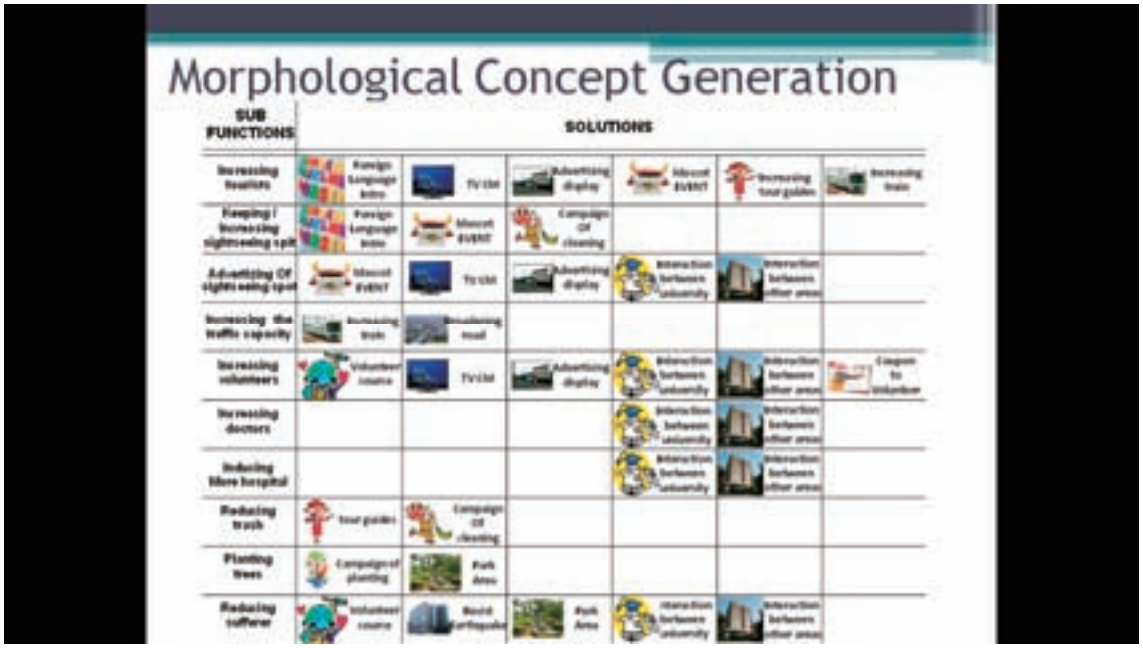


Table 4.1 Morphological Concept Generation

4-9. QFD

4-9-1. Context

Based on customer's requirement, using engineer metric and roof matrix, we could compare customer's requirement with our ideas in order to measure and confirm that our ideas could meet customer's requirements.

First of all, we defined our key stakeholders which include Government, Rescuer, volunteer, Victim (Corporate) Victim (Non-Corporate), Construction company Consulting Company.

And second, we have clarified our purpose in the view of business needs. In our plan, Non-Corporate may become customer of our reconstruction plan. Thus, it could be regarded as potential customer or prospective customer in sometime.

4-9-2. Result

Depends on analysis of customer` requirement and purpose of business needs, 2 main criteria were decided. 1. Non-Corporate wants to pay money to Consulting co.2. After disaster, Construction co. can provide efficient assistance for reconstruction.

4-9-3. Next step

The next step is to design a reconstruction plan for Hakone and Odawara which aims to reconstruction and restoration with continuous economic development.

4-9-4. Other thoughts

It is difficult to decide the range of our system and confirm the most suitable ideas for our plan by reason of our plan is a large-scale plan which covers almost factors in reconstruction. We had found that, however, the tools from ALPS could be really help

and assistant for us to organize our thoughts.

4-9-5. QFD I

Discuss how you chose the VOC's, the engineering metrics and the technical targets. Refer to your benchmarking effort here. Justify the weights given to the customer requirements and the interactions between the CR's and the engineering metrics.

Based on customer’s requirement, using engineer metric and roof matrix, we could compare customer’s requirement with our ideas in order to measure and confirm that our ideas could meet customer’s requirements.

First of all, we defined our key stakeholders which include Government, Rescuer, volunteer, Victim (Corporate) Victim (Non-Corporate), Construction company Consulting Company.

4-9-6. QFD II

Explain the correlation matrix and the solution element used for analysis.

And second, we have clarified our purpose in the view of business needs. In our plan, Non-Corporate may become customer of our reconstruction plan. Thus, it could be regarded as potential customer or prospective customer in sometime.

Depends on analysis of customer` requirement and purpose of business needs, 2 main criteria were decided. 1. Non-Corporate wants to pay money to Consulting co.2. After disaster, Construction co. can provide efficient assistance for reconstruction.

4-9-7. Complexity/Cost Worth Analysis

Explain the cost calculation. Clearly explain any assumptions you have made.

The emergency restoration and the regional economy are considered at the same time in our this system. Cost-worth of hard respect was very bad, and, as a result of Cost-worth Analysis, measures on a soft side became good Cost-worth.

Our system therefore measures in hard respect stops at least, is making the plan to center on measures on a soft side beforehand, and it becomes the one.

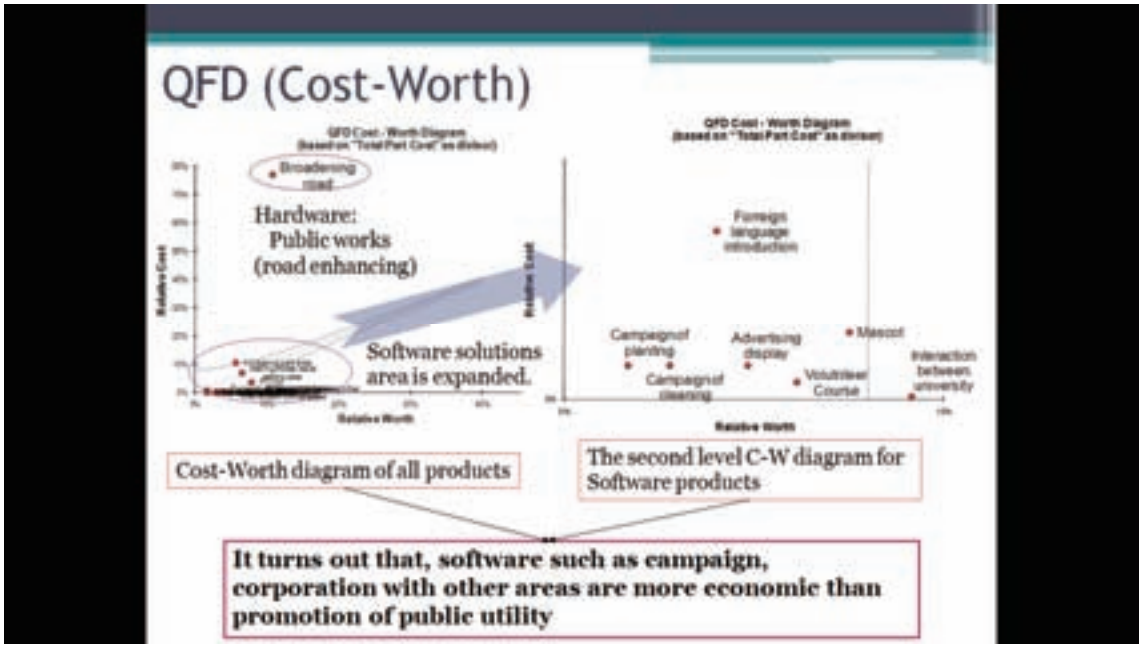


Fig4.7　QFD (Cost-Worth)

4-10. Scenario Prototyping Rapidly(Prototype)

4-10-1. Background

The BCP plan of the stricken area is necessary to revive the stricken area as the base.

Then, we thought, "It is a top priority matter to maintain a local community to settle on the BCP plan".

4-10-2. Our Plan

We thought that dealing by not a hard means but a soft means was efficient to maintain the community. We thought that it was the most efficient to organize the fan club of the stricken area for that. If the fan club is made, it becomes possible to collect the revival funds of the stricken area from the fan. To acquire the fan, we thought about some valuable privilege of memberships.

To make this project succeed preparation for content of proposal for stakeholder and preparation to acquire the fan is needed.

4-10-3. Concrete story

We set Hakone to the stricken area and thought about the means to tell the struck situation to the other party of the business talk.

We made two dioramas as a means. First of all, we reproduced the situation in which Hakone had received the damage of the volcano in the first diorama. In the second diorama, we reproduced the situation in which Hakone had not received damage. It is a purpose to share the other party of the business talk with the image of the disaster site because we show the other party two dioramas.

Moreover, we thought that advertising Hakone to the fan of Hakone was necessary. We made the pamphlet to recruit the member of the Hakone fan club for that as the most efficient advertising means.

We obtained the opinion from Hakone Tourist Association and the Hakone town office about the content of the service of the Hakone fan club to the member and the way of the project.

4-11. FMEA

Explain the sources of your failures? On what basis were the ratings given?

After the disaster, we thought what was important because it reconstruction through restoration.

It proposed how it did after it restored it, ,for instance,, afforestation and, the tourist attracting, etc. not to mention extinction, disinfection, and the life rescue as what had to be done first of all.

It became important the volunteer's attracting and the processing of garbage because of thought whether it was a severe wound for Hakone most by which act in consideration of the change in the minus by the action's not having been done after the action had been enumerated. If both related to the restoration at the early stage, too and these actions were few, it was ..restoration by few.. slow down, the tourist did not come, and it became a conclusion that it was not possible to reconstruction.

Next, using DSM, we decided to order of action.

Function or Requirement	Potential Failure Modes	Potential Causes of Failure	Occurrence	Local Effects	End Effects on Product, User, Other Systems	Severity	Detection Method/ Current Controls	Detection	RPN	Actions Recommended to Reduce RPN	Responsibility and Target Completion Date
Increasing Tourist	Decreasing Tourist	Image Down	6	Decreasing Tourist	Delaying Reconstruction	5	Ex post facto Reserch	5	150		
	Decreasing Tourist	Food Poisoning	4	Decreasing Tourist	Delaying Reconstruction	5	Keeping Clean	1	20		
	Decreasing Tourist	Bad Service	3	Decreasing Tourist	Delaying Reconstruction	5	Manner of Subordinates	1	15		
Keeping/ Increasing Sightseeing spot	Destroying seightseeing spot	Not Hot spring	1	Decreasing Tourist	Die out Sightseeing	5	Reserching in Observatory	3	15		
	Decreasing sightseeing spot	Cannot taking place Hakone Road Relay	3	Decreasing Tourist	Die out Sightseeing	5	Obstructed Road	5	75		
Beconing famous of Sightseeing spot	Becoming minor sightseeing spot	Bad Publicity	6	Decreasing Tourist	Die out Sightseeing	5	Obscure	5	150		
	Becoming minor sightseeing spot	Little Publicity	6	Decreasing Tourist	Die out Sightseeing	5	Can measure Amount	3	90		
Increasing Trees	Decresing Trees	Natural Destriction	8	Decreasing Tourist	Die out Sightseeing	5	Cannot Look beyond Effect of Eruption	5	200		
Reducing Suffer	Increasing Suufer	Cannot Repair Buildings	6	Increasing Suffer	Die out Sightseeing	5	Planning Fund in advance (Cannot See by Happening)	3	90		
	Increasing Suufer	Small doctors	5	Increasing Suffer	Die out Sightseeing	5	Can Know of Investigation	1	25		
	Increasing Suufer	Decrepit Hotels	7	Increasing Suffer	Die out Sightseeing	5	Can Know of Investigation	1	35		
Incresing Traffic capacity	Decresing Traffic capacity	A little Number of Train	2	Decreasing Tourist	Delaying Reconstruction	5	Cannot See by Happening	5	50		
	Decresing Traffic capacity	A traffic jam	6	Decreasing Tourist	Delaying Reconstruction	5	Can Predict Depending on Width of Road	3	90		
Reducing Trash	Incresing Trash	Cannot collection of Litter	8	Being prevalent Plague	Delaying Rehabilitation	10	Cannot See by Happening	3	240		
	Incresing Trash	Weak Earthquake-proof of Buildings	5	Increasing Suffer	Delaying Reconstruction	10	Can Know of Investigation	1	50		
Increasing Voluntters	Decresing Voluntters	Nothing of Transport	7	Increasing Suffer	Delaying Rehabilitation	10	Cannot See by Happening	5	350		
	Decresing Voluntters	Nothing of Supporting of Autonomy	4	Increasing Suffer	Delaying Rehabilitation	10	Being Agreement of Autonomy	1	40		
Increasing Doctors	Decresing Doctors	Nothing of Supporting of Autonomy	4	Declining Service of Medical treatment	Delaying Reconstruction	5	Being Agreement of Autonomy	1	20		
	Decresing Doctors	Nothing of Combination to Medical Universitys	4	Declining Service of Medical treatment	Delaying Reconstruction	5	Being Agreement of University	1	20		
Incresing more Hospitals	Decreasing Hospitals	Nothing of Suppoting of Autonomy	4	Declining Service of Medical treatment	Delaying Reconstruction	5	Being Agreement of University	1	20		

Table 4.2 FMEA (Sources and Ratings)

5. Design Recommendation

5-1. Failure case of disaster reconstruction

After disaster, there are risks of the tourists decreasing and decay of the tourism economy, and it is so called negative spiral. To make restoration and futher development of disaster place Hakone, both of the disaster reconstruction and the local economy must be considered. The local economy relies on the local community, therefore, the collapse of the local community must be avoided.

CASE : Mt. Unzen volcanic disaster (1990's)

The population and visitors of Unzen area is dicreasing after the volcanic disaster in 1991. This is because of the infamous, unsafe image and the outflow of the young working force. This is the example of the local community collapse and the failure of the disaster reconstruction.

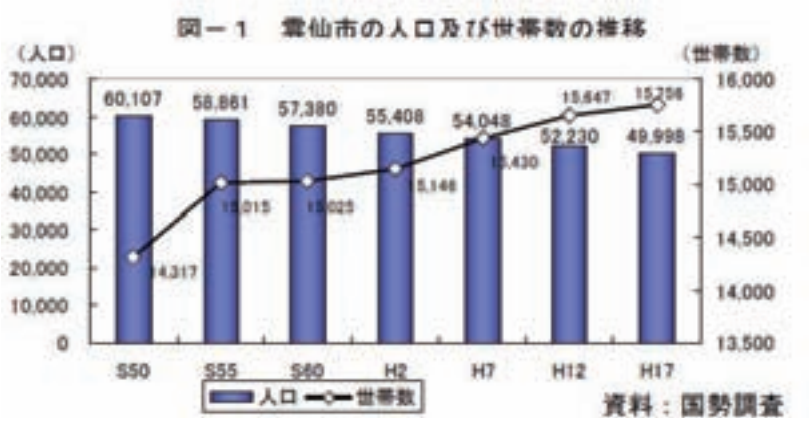


Fig 5.2　Population transition in Unzen

Fig 5.3　Visitor transition of Unzen

Fig 5.4　Amount of tourism consumption of Unzen

5-2. Hakone FAN CLUB

FAN CLUB will be the effective BCP (Buisiness Continuity Plan) to protect from the

collapse of the local economy and community. The disaster preparation before disaster tends to be negative, but FAN CLUB is the positive disaster preparation plan.

Example of FAN CLUB system

There are two grades in FAN CLUB. Both grades members are offered codial hospitality in Hakone, such as

- Limited menu in restaurant
- Special seat of Hakone-ekiden Relay Race
- Discount of souvenir
- Priority reservation right (restaurant, hotel) etc...

Above these, Limited Platinum member, which is the highest grade of the FAN CLUB, would have more special amenity in Hakone. To become the limited platinum member, 10 stays in Hakone for one year is necessary. The platinum services will be offered to Platinum member for one year after the year when 10 stays in Hakone were earned. Before disaster happens, the FAN CLUB is useful for increasing the tourists.

If natural disasters are hit in Hakone, the plenty of rehabilitation volunteers and the reconstruction fund are necessary for quick recovery from the disaster. After the natural disaster, FAN CLUB database would be changed into the volunteer database. FAN CLUB members will become volunteers in higher proportion compared to non FAN CLUB people. And the part of the FAN CLUB member fee is used for the disaster rehabilitation fund. After the rehabilitation, the FAN CLUB member will come back and be still interested in Haknoe after the disaster. In addition, the scar of the disaster, such as molten rock lava or earthquake fault may become new sight-seeing spot.

In this way, the FAN CLUB would help for the volunteer member for the reconstruction and the keep the tourists number.

Fig 5.5 Hakone FAN CLUB overview

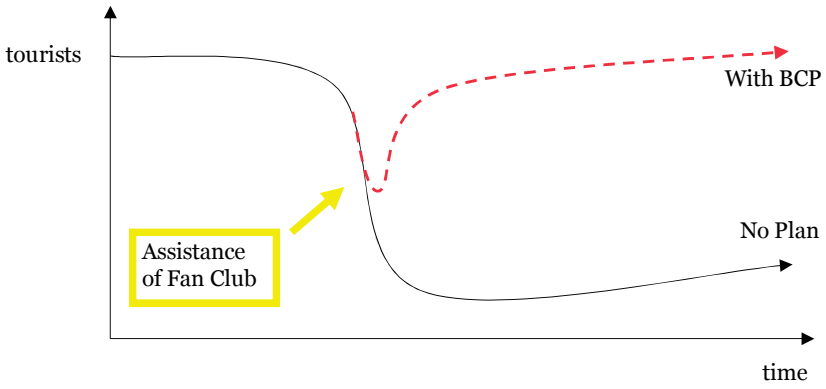


Fig 5.6 Expectation of the tourists using FAN CLUB BCP

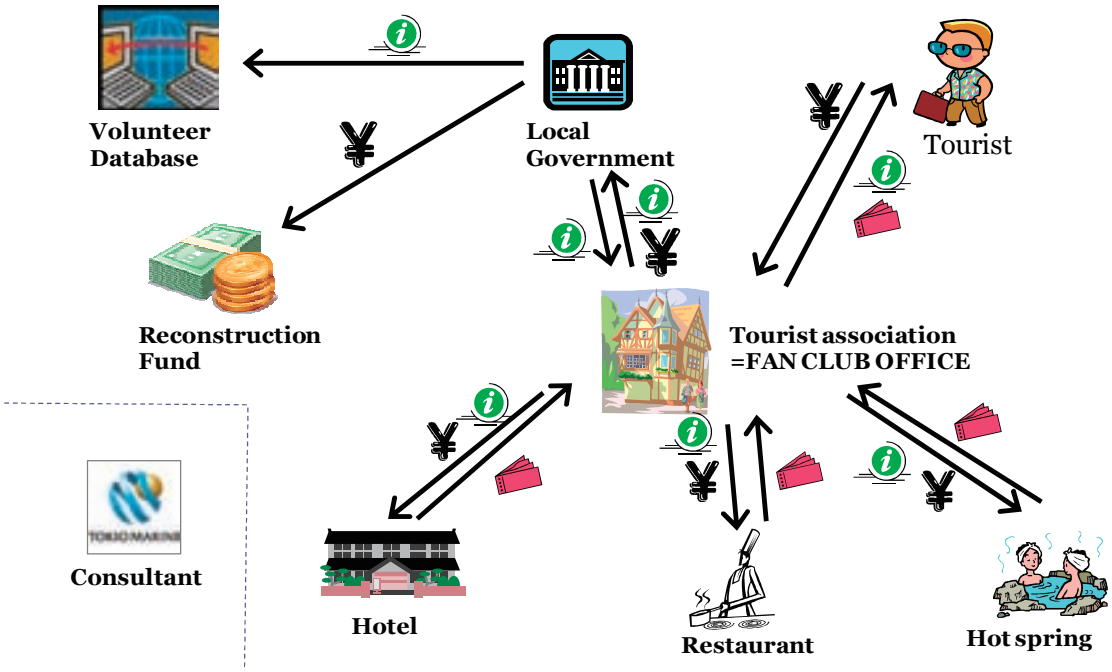


Fig 5.7　CVCA of Hakone FAN CLUB

6. Competitive Analysis

In this chapter, our team will calculate net present value (NPV). To calculate NPV, we need revenue, fixed costs and valuable costs.

According to the questionnaire survey, the average price on annual membership fee is about ¥5000 ($50). And we assume that in the first five years, one hundred thousand people will join Hakone fan club. It is (0.5%) zero point five percent of all tourists per year for Hakone.

Revenue is membership fee. Fixed costs are building a volunteer database and its maintenance and labor cost. Valuable costs are discount of souvenir and hotels.

For these assumptions, we calculate cash flow and present value. Table 6.1 shows NPV and figure 6.1 shows graph of PV and cash flow in the first 5 years.

assumption:"Every member travel Hakone once a year on average."

year	# of members	club fee	revenue	(①Fixed costs) a volunteer database and its maintenance and labor cost	②valuable costs	
					discount of souvenir	discount of hotels
1	20000	5000	100,000,000	50,000,000	2500	2000
2	40000	5000	200,000,000	10,000,000	2500	2000
3	60000	5000	300,000,000	10,000,000	2500	2000
4	80000	5000	400,000,000	10,000,000	2500	2000

5	100000	5000	500,000,000	10,000,000	2500	2000	450,000,000

year	③=①-②	④Discount Factor(10%)	PV(=③*④)	accumulated NPV
1	-40,000,000	100%	-40,000,000	-40,000,000
2	10,000,000	91%	9,090,909	-30,909,091
3	20,000,000	83%	16,528,926	-14,380,165
4	30,000,000	75%	22,539,444	8,159,279
5	40,000,000	68%	27,320,538	35,479,817

Table 6. 1 NPV calculation

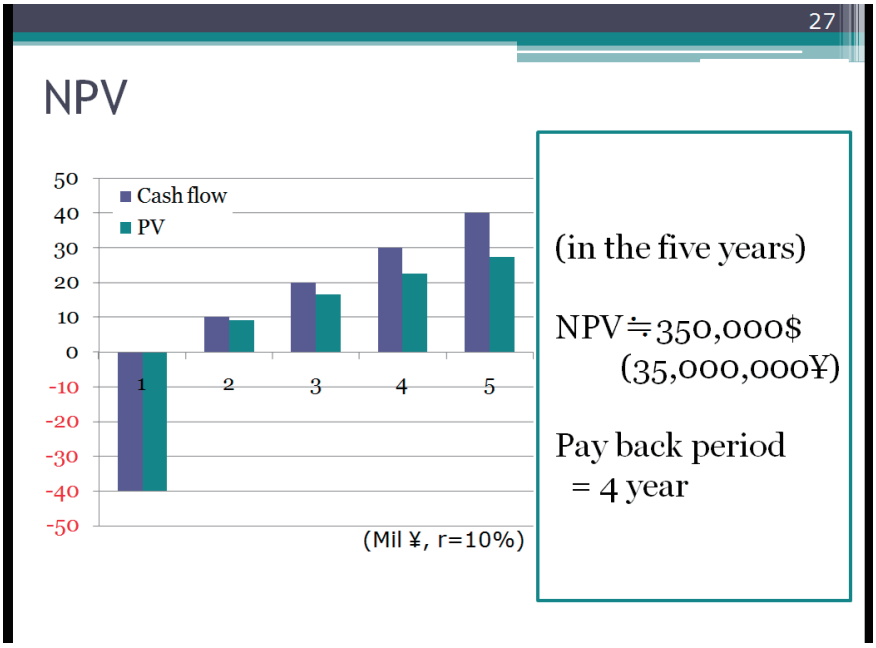


Fig 6. 1 the graph of PV and cash flow in the first 5 years

7. ALPS Roadmap and Reflections

ALPS roadmap and reflections are as following figures. (Fig 7.1, 7.2, 7.3)

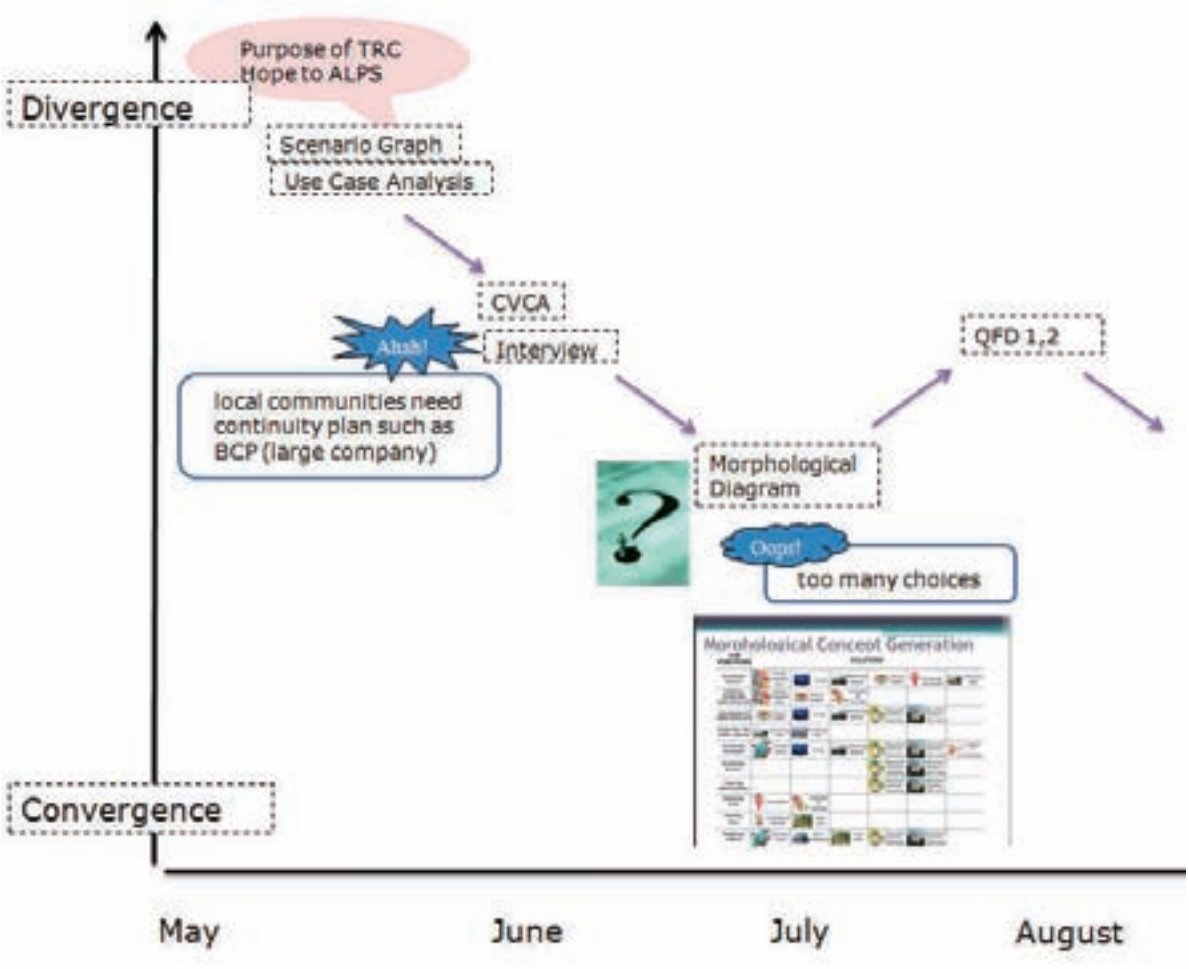


Fig 7. 1 ALPS roadmap 1/3

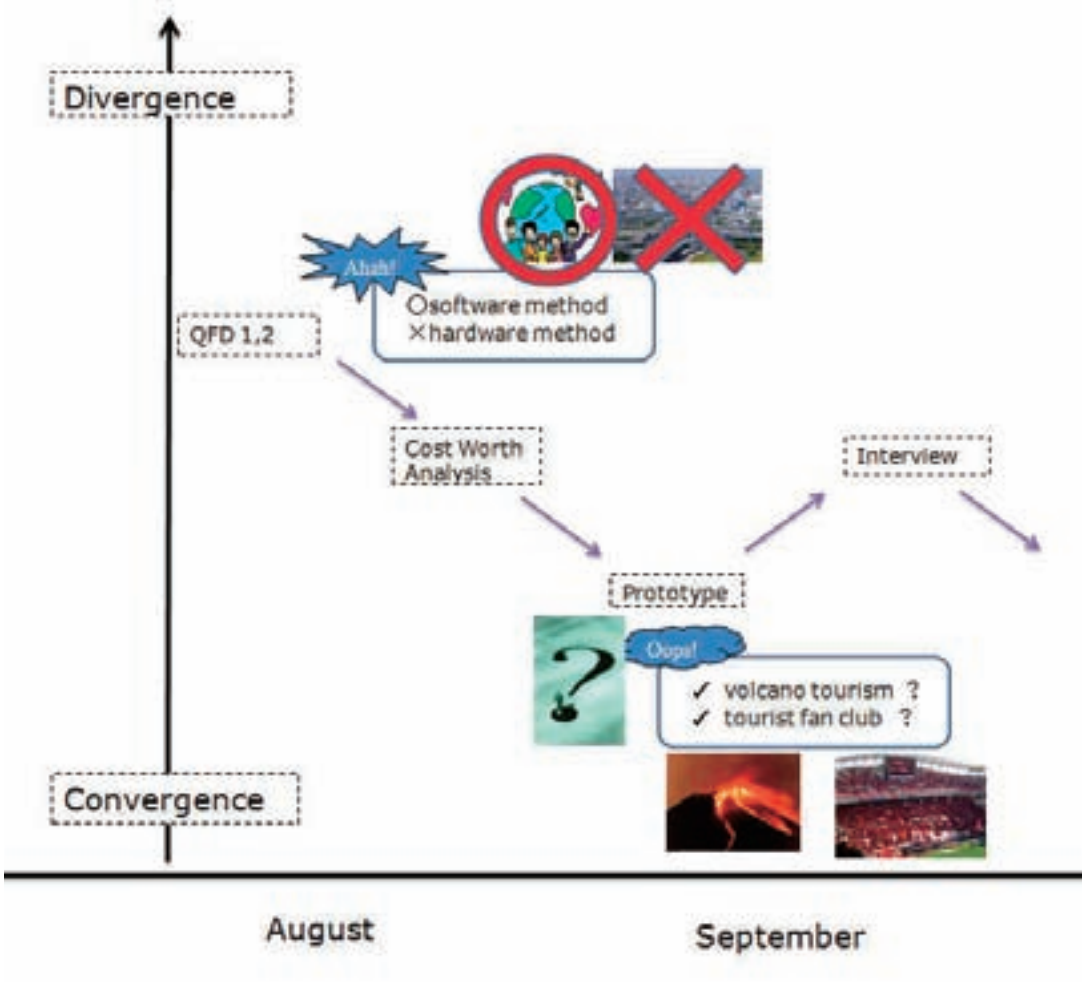


Fig 7. 2 ALPS roadmap 2/3

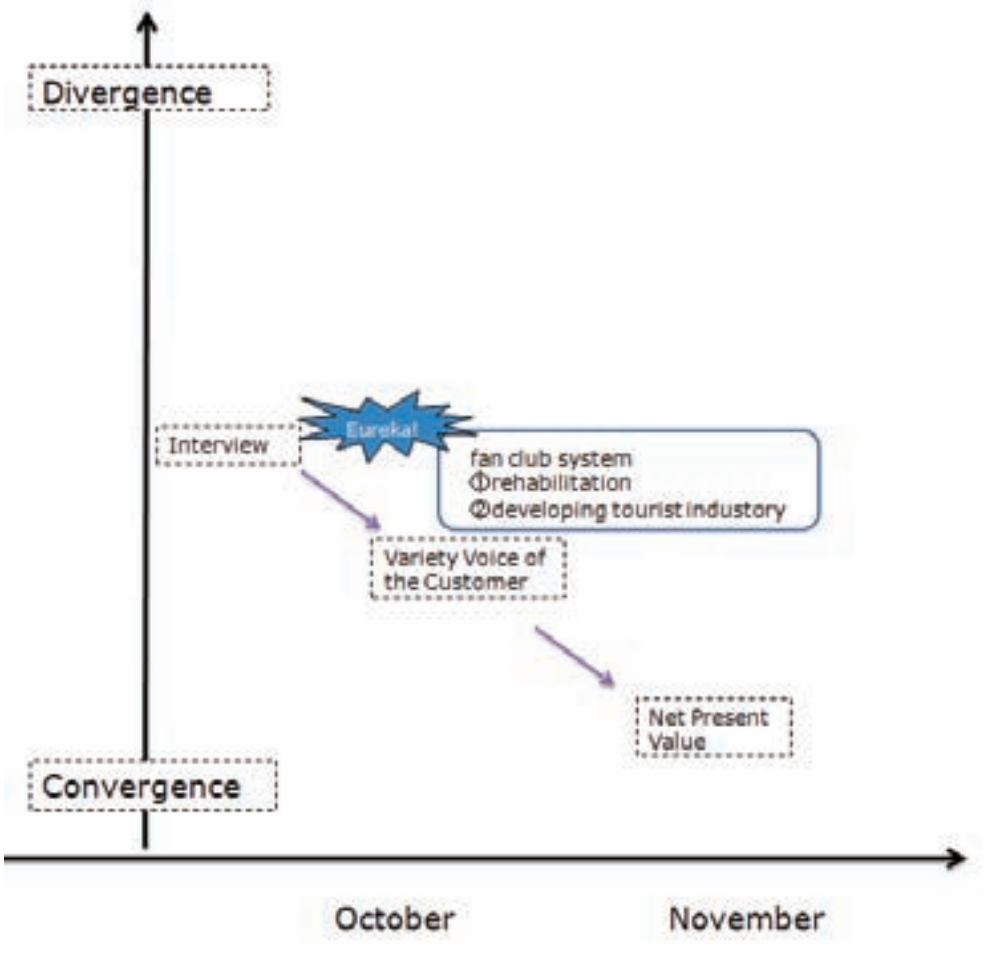


Fig 7. 3 ALPS roadmap 3/3

8. Conclusion and Future Work

8-1. CONCLUSION

For the BCP of the sight seeing spot, FAN CLUB is the effective and positive disaster preparation, which protect from the collapse of the local economy and community and brings further development of the sight seeing spot, like Hakone.

8-2. FUTURE WORK

The detail contents of the Hakone FAN CLUB have much room to discuss. For example, social media, such as Facebook, mixi, would be useful for the information transmission and exchange.

Based on the further marketing process, the FAN CLUB detail system will improve and become feasible for the real project of the disaster preparation.

9. Acknowledgments

・TOKIO MARINE & NICHIDO RISK CONSULTING CO.,LTD. (東京海上日動リスクコンサルティング株式会社)
・Hakone Town (箱根町)
・Hakone Tourist Association (箱根観光協会)
・Volunteer network of west ward of city Yokohama(横浜西区ボランティアネットワーク)
・Odawara city (小田原市)

10. References

[1] 防災科学技術研究所 National Research Institute for Earth Science and Disaster Prevention：火山ハザードマップデータベース http://www.bosai.go.jp/library/
[2] 地震調査研究推進本部 the Headquarters for Earthquake Research Promotion
[3] 防災科学技術研究所 National Research Institute for Earth Science and Disaster Prevention：J-SHIS より：http://www.j-shis.bosai.go.jp/

11. Appendix

11-1. Questionnaire about FAN CLUB

Questionary investigation about Hakone FAN CLUB were conducted. (Sample: 49 people) The FAN CLUB fee and the preference of the amenity were surveyed through the quetionnaire.

No	Sex	Age	Occupation	Fee Estimation
1	Female	50	Manager	10000
2	Female	20	Student	2000
3	Male	20	Service attendant	9975
4	Female	60	Counselor	10000
5	Female	20	Student	12000
6	Male	20	Hairdresser	15000
7	Male	50	Public officer	20000
8	Female	75	Designer (retired)	10000
9	Male	20	Student	3000
10	Male	50	Craftsman (Dyeing)	10000
11	Female	40	Housewife	5000
12	Male	50	Company worker	5000
13	Male	70	Inoccupation	3000
14	Female	50	Housewife	3000
15	Female	20	Student	2000
16	Female	20	Student	3000
17	Male	20	Student	1000
18	Male	20	Student	2000
19	Female	20	Company worker	3000
20	Male	20	Company worker	3000
21	Female	40	Housewife	0
22	Female	30	Housewife	200
23	Female	20	Housewife	1000
24	Female	40	Housewife	1000
25	Female	30	Housewife	10000
26	Female	30	Housewife	1000
27	Female	30	Housewife	0
28	Female	30	Housewife	0
29	Female	30	Housewife	500
30	Female	30	Housewife	500
31	Female	40	Housewife	0
32	Male	32	Company worker	2000
33	Male	54	Company worker	5000
34	Male	31	Company worker	1000
35	Male	31	Company worker	5000
36	Male	34	Company worker	3000
37	Male	38	Company worker	10000
38	Male	32	Company worker	10000
39	Male	32	Company worker	10000
40	Male	40	Manager	12000
41	Male	23	Student	0
42	Male	20	Student	0
43	Female	22	Student	10000
44	Female	20	Student	3000
45	Male	36	Manager	12000
46	Male	25	Student	2000
47	Female	42	Student	15000
48	Male	22	Student	3000
49	Male	23	Student	4500
AVERAGE		33.10204		5177.040816

Table 11-1. Questionnaire List and FAN CLUB fee estimation result (49 people)

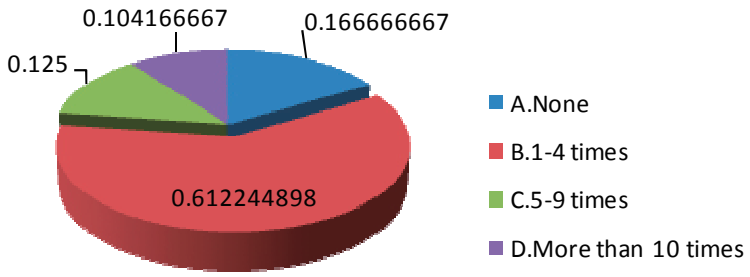


Fig 11.1　Questionnaire result " How many times do you go to Hakone per a year"

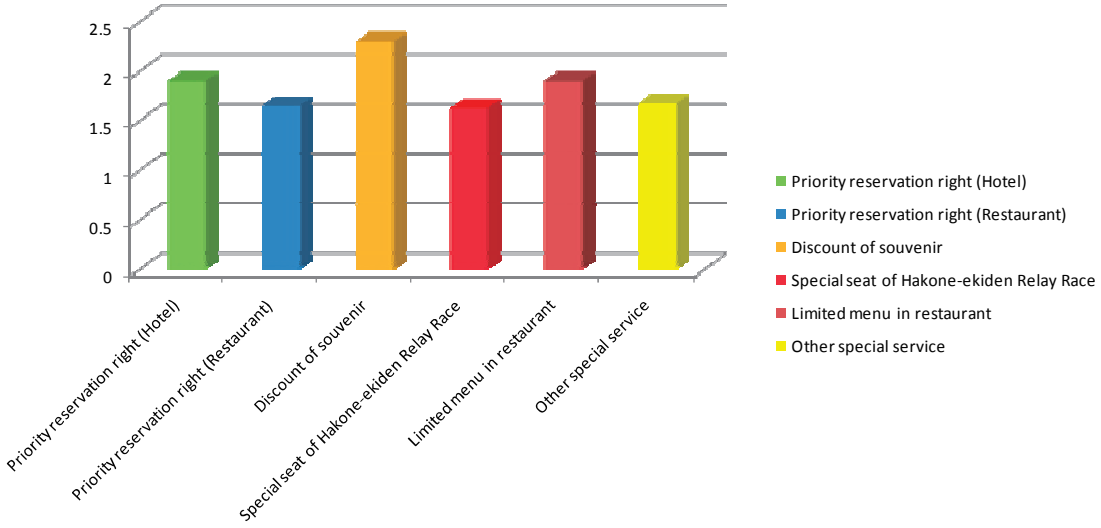


Fig11.2　Preference of FAN CLUB amenity

Group 2’s Final Presentation Slides

Reconstruction Project for Tourist Resort after Disaster

ALPS-Group2

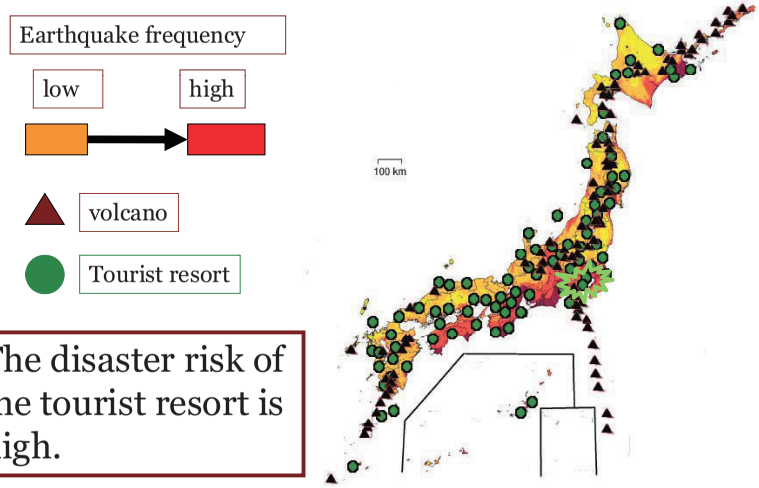
S.Okano (M1)
A.Naito (M1)
S.Okumura (M1)
H.Sunakawa (Jaxa)
R.Yam (M1)

Special Thanks :

TOKIO MARINE & NICHIDO RISK CONSULTING CO.,LTD.
Prof. Toshiyuki Yasui

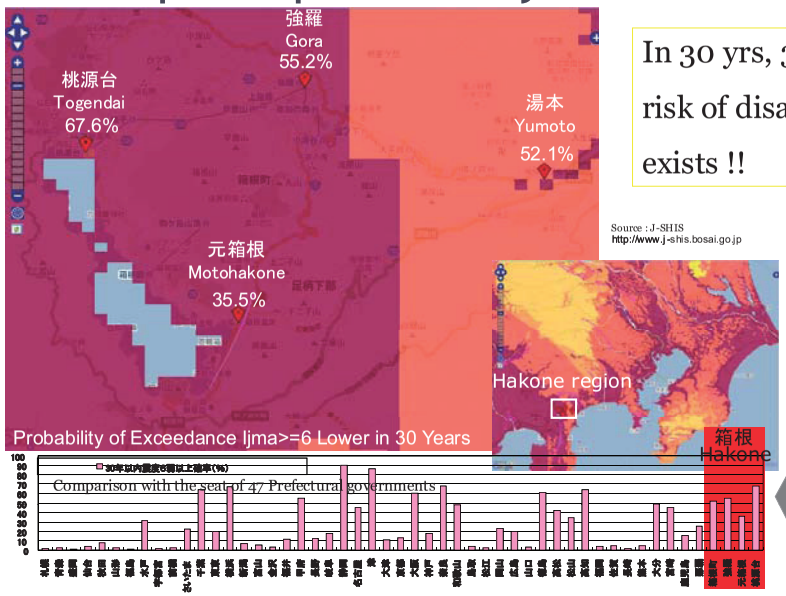
DATA : Fri. 11/19/2010

The Distribution Map of Disaster Areas in Japan



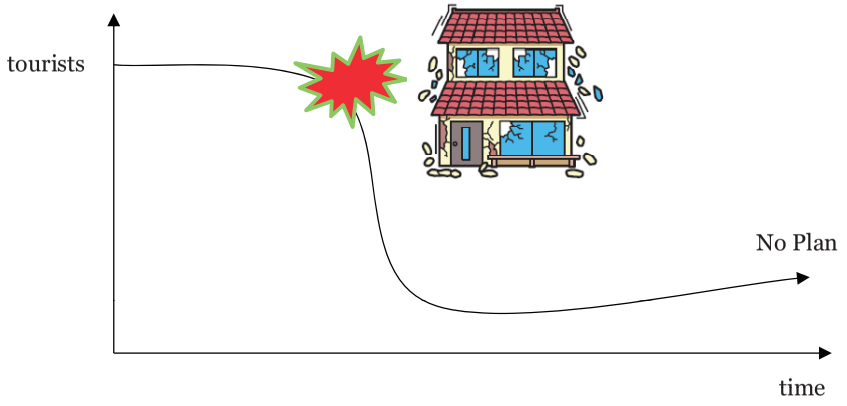
The disaster risk of the tourist resort is high.

Earthquake probability of Hakone

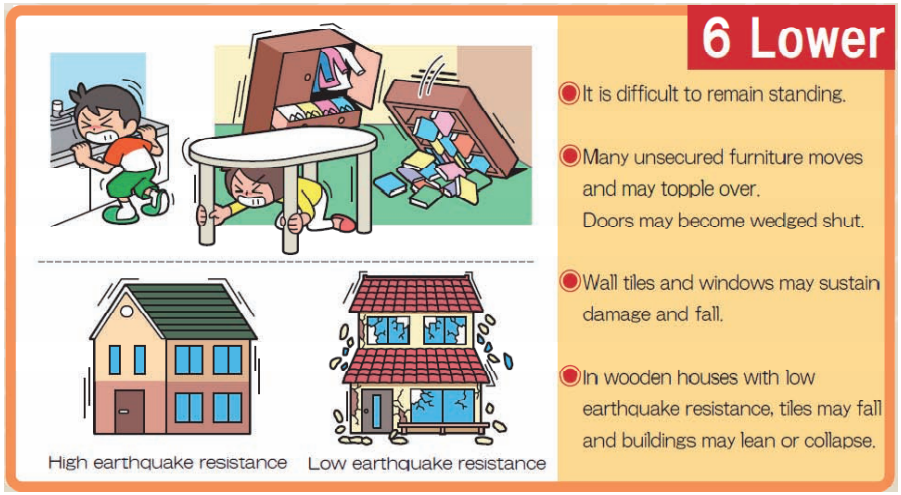


In 30 yrs, 30% risk of disaster exists !!

Transition of Number of Tourists

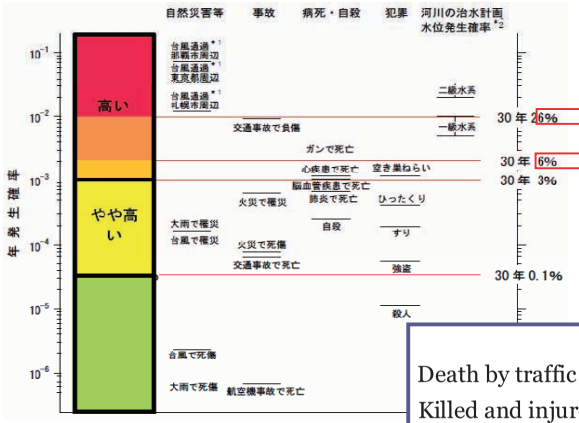


Shake of intensity 6 lower



Source : The Meteorological Agency
http://www.jma.go.jp/jma/en/Activities/intsummary.pdf

About the Probability in the earthquake risk



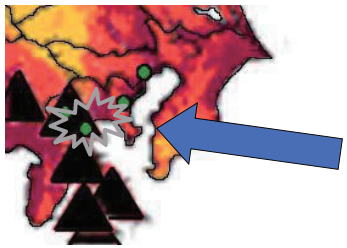
≒ 10% in 10 years

≒ 10% in 50 years

Source: Headquarters of Earthquake Research Promotion

Probability in 30 years	
Death by traffic accident	: About 0.2%
Killed and injured due to a fire	: About 0.2%
Affliction due to a fire	: About 2%
Injury by traffic accident	: About 20%

Collection of Vox by Interview & Observation



- Odawara local government
- Hakone local government
- Hakone tourist association
- Volunteer Leader

Analysis of VOX from Interview & Observation

- If the disaster happens, local government can do only “rehabilitation”.
- The tourist decreasing is expected because of the infamous image caused by the disaster.
- The sightseeing spot relies only on the tourism industry.
- Local community collapse may cause devastation of sightseeing spot, therefore, the local community must be protected.

Reconstruction Project for Tourist Resort after Disaster

The Distribution Map of Disaster Areas in Japan

Does community continuity contribute to Safety & security of Japan?

interview

Morph

QFD

CVCA

To By Using

Local community continuity

Does the Project contribute to community continuity?

Make Project

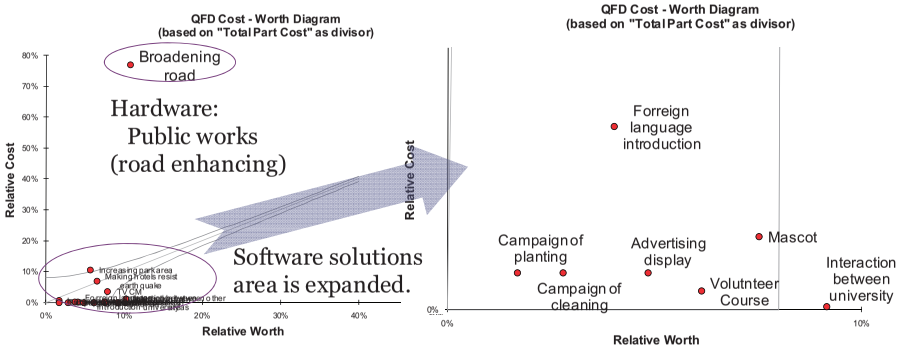
Is the Project approved?

Prototype

Morphological Concept Generation

SUB FUNCTIONS	SOLUTIONS					
Increasing tourists	Foreign Language Intro	TV CM	Advertising display	Mascot EVENT	Increasing tour guides	Increasing train
Keeping / Increasing sightseeing spit	Foreign Language Intro	Mascot EVENT	Campaign Of cleaning			
Advertizing Of sightseeing spot	Mascot EVENT	TV CM	Advertising display	Interaction between university	Interaction between other areas	
Increasing the traffic capacity	Increasing train	Broadening road				
Increasing volunteers	Volunteer cource	TV CM	Advertising display	Interaction between university	Interaction between other areas	Coupon to Volunteer
Increasing doctors				Interaction between university	Interaction between other areas	
Inducing More hospital				Interaction between university	Interaction between other areas	
Reducing trash	tour guides	Campaign Of cleaning				
Planting trees	Campaign of planting	Park Area				
Reducing sufferer	Volunteer cource	Resist Earthquake	Park Area	nteraction between niversity	Interaction between other areas	

QFD (Cost-Worth)



Cost-Worth diagram of all products

The second level C-W diagram for Software products

It turns out that, software such as campaign, corporation with other areas are more economic than promotion of public utility

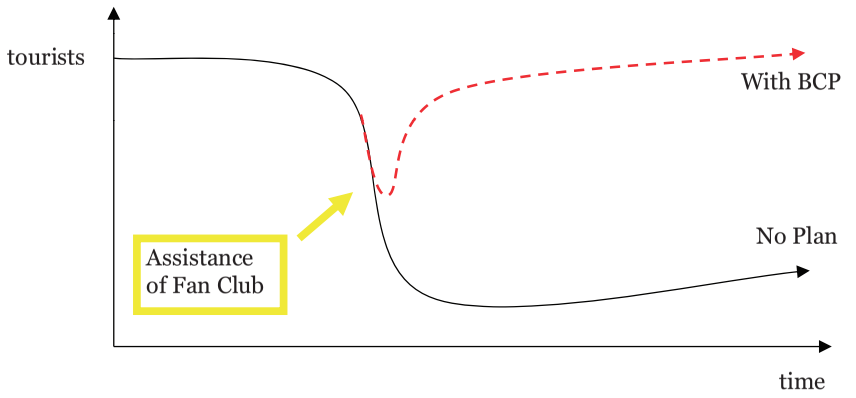
HAKONE FAN CLUB

Hakone can amuse you.....

BCP of Hakone and Continuance of community

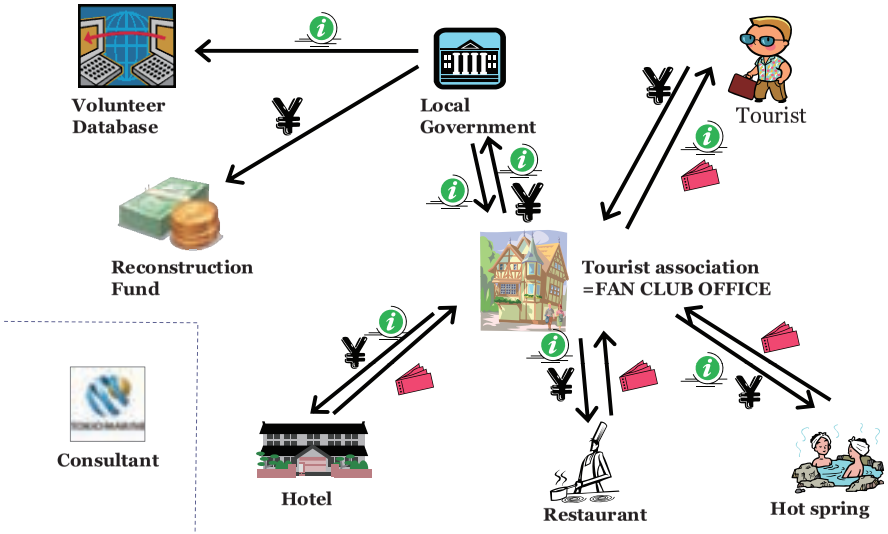
Hakone is always enriched by the favor of the fan club.....

Transition of Number of Tourists



The number of guests will recover at the early stage even if the disaster happens.....

CVCA



To By Using

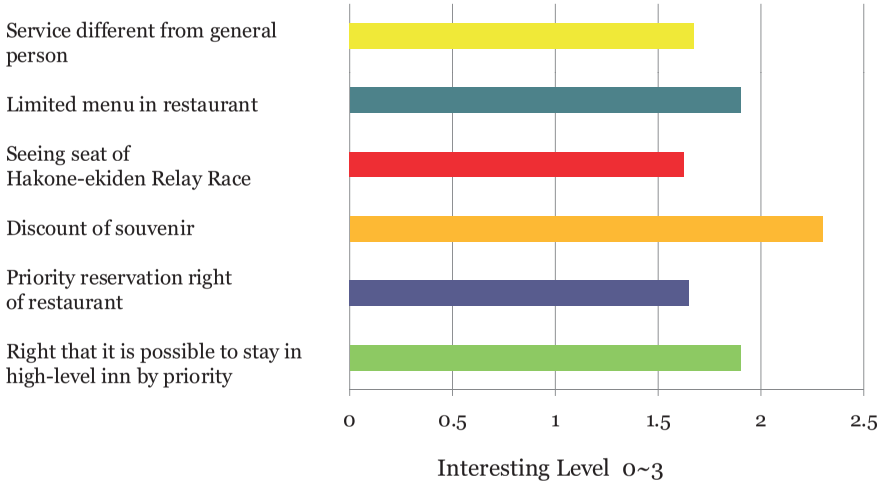
To repair and reconstruct quickly after disaster of local economy

By promoting sustainable development of the local (travel) industry

Using a fan club with a fund and volunteer database

Benefit

Questionnaire to 49 young and old men and women



Membership fee

Questionnaire of amount of fee hope (n=49)

Average

5000 Yen

LIMITED Platinum

10000 Yen

for reference: sports team fan club

Forecast of membership of fan club

$$\% = \frac{\text{\# of fan club}}{\text{total audience per year}}$$

①Idol group

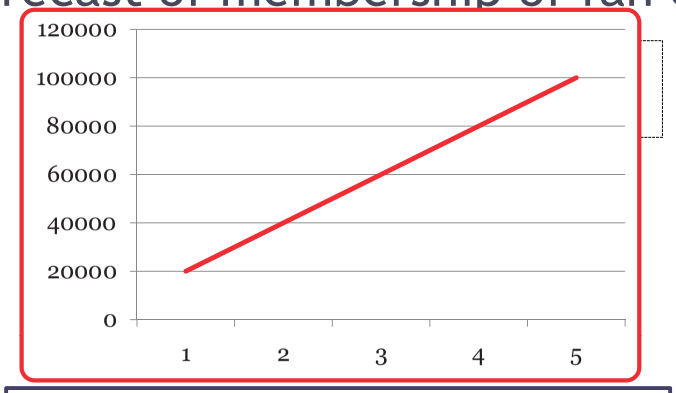
$$80\% = \frac{800{,}000}{1{,}000{,}000}$$

②Sports team

$$5\% = \frac{150{,}000}{3{,}000{,}000}$$

HANSHIN Tigers OFFICIAL FAN CLUB

Forecast of membership of fan club



● in the short term (5 years)

$$0.5\% = \frac{100{,}000}{20{,}000{,}000}$$

NPV

- Revenue – Cost = Profit

NPV

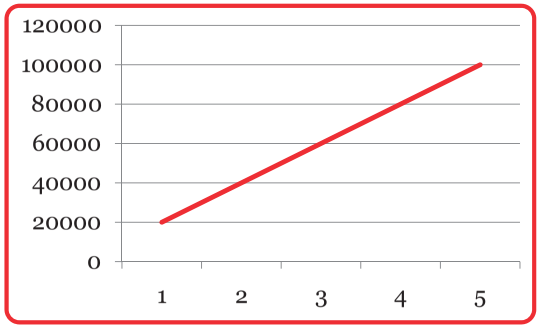
- Revenue – Cost = Profit
  - Revenue = Fan club annual fee × # of fan club

Average

5000 Yen

LIMITED
Platinum

10000 Yen



NPV

- Revenue – Cost = Profit
  - Cost = Fixed costs + Valuable costs

NPV

- Revenue – Cost = Profit
  - Cost = Fixed costs + Valuable costs

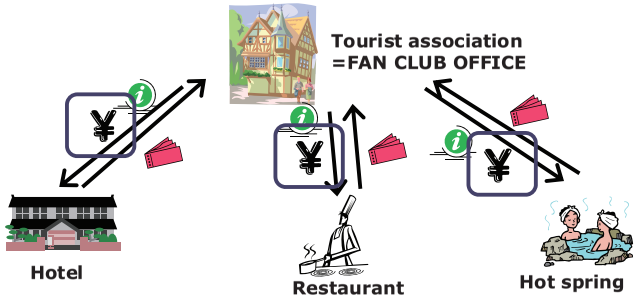
1. Volunteer database construction(initial cost)
2. Volunteer database maintenance(running cost)

Volunteer Database

NPV

- Revenue – Cost = Profit
  - Cost = Fixed costs + Valuable costs

1. Discount ticket cost
2. Charge for hotels, restaurants and hot springs



NPV

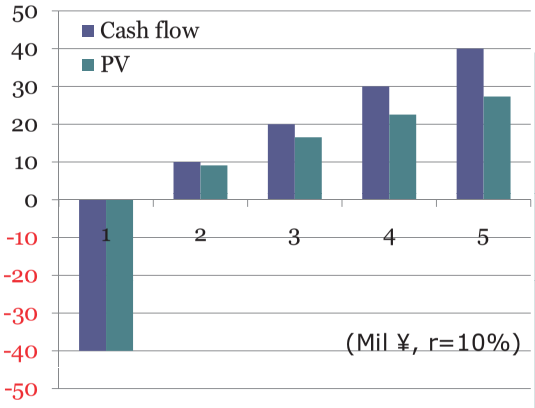
- Revenue – Cost = Profit

	A	B	C	D	E	F	G
1	前提: 会員は平均して、年間に1度、箱根で観光し、お土産を買って一泊する						
2							
3	年度	ファンクラブ会員推移	会費	収入	DB構築・維持、事務委託費	お土産割引単価	宿泊割引単価
4	1	20000	5000	100,000,000	50,000,000	2500	2000
5	2	40000	5000	200,000,000	10,000,000	2500	2000
6	3	60000	5000	300,000,000	10,000,000	2500	2000
7	4	80000	5000	400,000,000	10,000,000	2500	2000
8	5	100000	5000	500,000,000	10,000,000	2500	2000
9							
10							

	H	I	J	K	L	M
				10%		
	割引のコスト	単年度収支	累積収支	Discount Factor	PV	累計NPV
)	90,000,000	-40,000,000	-40,000,000	100%	-40,000,000	-40,000,000
)	180,000,000	10,000,000	-30,000,000	91%	9,090,909	-30,909,091
)	270,000,000	20,000,000	-10,000,000	83%	16,528,926	-14,380,165
)	360,000,000	30,000,000	20,000,000	75%	22,539,444	8,159,279
)	450,000,000	40,000,000	60,000,000	68%	27,320,538	35,479,817

NPV

- Revenue – Cost = Profit = **Reconstruction Fund**



(in the five years)

NPV=350,000$
(35,000,000¥)

Pay back period
= 4 year

Thank You !

Any Question?

独立行政法人 労働政策研究・研修機構
The Japan Institute for Labour Policy and Training

表 2　先進国のボランティア比率と経済規模（各国データは 1995～1998 年）

国名	合計	就業者	ボランティア	ボランティア数（千人）	ボランティアの経済規模（百万ドル）
オーストラリア	6.3%	4.4%	1.9%	1,832	$4,484.80
ドイツ	5.9%	3.5%	2.3%	7,071	$48,433.00
フィンランド	5.3%	2.4%	2.8%	326	$2,657.50
オーストリア	4.9%	3.8%	1.1%	550	$1,380.40
スペイン	4.3%	2.8%	1.5%	1,681	$7,055.10
日本	4.2%	3.2%	1.0%	485	$23,354.80
イタリア	3.8%	2.3%	1.5%	2,048	$8,290.70
先進国合計	7.4%	4.70%	2.7%	86,605	$305,836.20

データ出所）JHCNP.

Prospect of ＃of volunteers
100,000×４％＝4,000

http://www.jil.go.jp/institute/rodo/2005/documents/repo003_01.pdf