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iv. Narrow land restrict to build new buildings and houses

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Additional interview and observation conducted after we defined four problems showed us the other problem: communication gap in Tsuneishi area. There are 3 major gaps between sub-communities, such as different generation, different town association, or Tsuneishi Employee and other residents. On the other hand, we found out that there are active local community. They have many event and communication in the community center. It is the wonderful resource in Tsuneishi.

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On Demand Bus System has challenge on sustainable profit. The system is introduced in the many community, but almost all of these cases require the subsidy from local government. Usually 70% of incomes are subsidies. The system is very useful for substitute of the local fixed route bus, but it is difficult to operate for private enterprises.

From the study result we made, we recommend Hitch Life Community System. The system has a concept "we are all friends in Tsuneishi". The system is the membership carpool system in Tsuneishi utilize strong human network. A fundamental use-case is described below. Drivers and users made member registration first. A driver responds to a user's hitchhike usually. User interface is local SNS and Kairanban: a notice around from house to house in the neighborhood. A user can check operation status of a car and make reservation. A driver pick up users could earn local currency as incentive. Moreover, the system uses the bus already operated inside the Tsuneishi HD factory as a On Demand Bus in the high demands time as morning. Income source of the system is user's registration fee, advertise revenue on the car and sales of cooperation stores.

We carried out field survey of the French Covoiturage system as the system's benchmark. Covoiturage is the carpool system using SNS started by a venture enterprise. The system is intended to transport from a local city to other local city in French. At first, users and drivers
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In the early phase of this system, Tsuneishi HD will recommend their employee, which occupies the half of the daytime population in Tsuneishi area becoming a driver to provide drivers need in early phase.

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<table>
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<th>Notes</th>
<th>Student final reports</th>
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Group M
Group M’s Theme Proposed by Tsuneishi Holdings Corporation

Abstract of your project theme:

【Background】
TSUNEISHI Group is located in Numakuma-cho, the coastal area of Fukuyama city, Hiroshima. Its main business is shipbuilding and has been developed with the support from local community for more than 100 years since 1903. But one of the main issues is how to survive in Japan and continue to support the local economy because Korea and China have been expanded their building shares in the new shipbuilding industries recently. Tsuneishi area, Numakuma-cho, the local community also has an expecting big crisis that the town might become inactive in future by many various problems such as the population decline, the aging population, the weak infrastructures of communication and transportation, etc.

【Opportunity to Change】
TSUNEISHI has a plan to renovate its main office building and some company condominiums among the owned 50 of them. Moreover, it also has a plan to organize a smart grid infrastructure among the main office, the factories and company condominiums to reduce its energy consumption comprehensively.

We expect that if we can organize a smart community not only by ourselves but also together with the town and its residents, we might be able to revitalize the local community by its synergy effect.

【Target & Expected theme for ALPS】
To revitalize the local community by a symbiotic smart community between the company and the local people.
1. How to inspire the local people to join the project.
2. How to produce synergy effects and activate the social life in the local area.

<Key Point>
1. What is the advantage for the local town and its people to join the project?

Fig. 1: Tsuneishi Area in Fukuyama City
Fig. 2: Tsuneishi Smart Community
ALPS Final Report 2011

Group M

Project Title:
The Voyage of TSUNEISHI for the Next 100 Years

Theme:
Revitalization of the Local Community

Proposer Organization: Tsuneishi Holdings Corporation

Proposer Organization’s Supporter: Shinji WATADANI, Kazuhiro KANEMASA, Haruko IMOTO & Hiroko IKEDA

Keio Mentor: Toshiyuki YASUI & Akira TOSE

Members:
Erika IKEDA
Kohei TANAKA
Atsushi ATARASHI
Shigeo SUZUKI
Takafumi HARADA
Yuka YAMAMOTO

Graduate School of System Design and Management
Keio University
Final Report
The Voyage of TSUNEISHI for the Next 100 Years

ALPS Team M

TSUNEISHI HD

Erika Ikeda, Kohei Tanaka, Atsushi Atarashi, Shigeo Suzuki, Takafumi Harada, Yuka Yamamoto

Graduate School of System Design and Management,
Keio University, 4-1-1 Hiyoshi, Kouhoku, Yokohama Kanagawa,
223-8526, Japan
1. Executive Summary

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2. Table of Contents

1. Executive Summary ........................................................................................................... 1
2. Table of Contents ............................................................................................................. 3
3. Problem Statement .......................................................................................................... 5
4. Analysis and Discussion of ALPS Methods ................................................................. 7
   1.1. Mind Map – When did you use this and how was it useful? ............................ 7
   1.2. Project Priority Matrix • How did you choose what is constrained, optimized, accept? ................................................................. 7
   1.3. Scenario Graph • Explain how you brainstormed and selected your scenario(s). ................................................................. 8
   1.4. CVCA • While summarizing what you found by doing this tool • explain how you found those. Pay particular attention to any new stakeholder that you discovered. ................................................................. 9
   1.5. Interview Observation – Where did you visit? What have you learned? How did it help or change your project? ....................... 9
   1.6. Scenario Prototyping Rapidly – What did you try to test? ......................... 11
   1.7. Value graph • What's surprising? ........................................................................ 12
   1.8. Function•Structure map • Explain the items that are connected more than others and whether that matches your expectations? .... 12
   1.9. Design of Variety .................................................................................................... 13
   1.10. Environmental Complexity/Recyclability ............................................................ 13
   1.11. Serviceability ......................................................................................................... 13
   1.12. Quality Scorecarding ............................................................................................ 14
   1.13. Design of experiment ............................................................................................ 14
   1.14. Design Structure Matrix ....................................................................................... 14
   1.15. QFD ....................................................................................................................... 17
5. Design Recommendation ................................................................................................. 18
   1.1. Overview of Tsuneishi Hitch Life System ............................................................ 19
   1.2. Revenue Model ....................................................................................................... 21
   1.3. Description of subsystems ..................................................................................... 23
      1.3.1. Sales/Advertisement in the car ..................................................................... 23
1.3.2. "Art on the car" subsystem ................................................................. 24
1.3.3. EV experiments ..................................................................................... 25
1.4. Cover range of Transportation system .................................................. 26

6. Competitive Analysis .................................................................................. 27
7. ALPS Roadmap and Reflections .............................................................. 28
8. Conclusion .................................................................................................. 31
9. Future Work ............................................................................................... 31
Acknowledgment .......................................................................................... 35
Reference ........................................................................................................ 36
Appendix .......................................................................................................... 37
3. Problem Statement

Following requirements were given from Tsuneishi Holdings, our proposer company. This requirement reflects the their history which developed with the Tsuneishi area for 100 years.

<table>
<thead>
<tr>
<th>Kind of requirements</th>
<th>Content of requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirement of mission</td>
<td>Tsuneishi HD shall continues for 100 years with TSUNEISHI region and resident</td>
</tr>
<tr>
<td>Most important requirements</td>
<td>This system shall activate TSUNEISHI region</td>
</tr>
</tbody>
</table>

Table 3·1 Initial requirements from TSUNEISHI HD

First, we made several visit to Tsuneishi area to gather residents' voice. Through the resident’s voice we gathered, we defined “Regional revitalization” in Tsuneishi area. We gathered many resident’s, employee’s, government’s and other stakeholder’s voice. As a result, we defined that we should solve the following five issues to revitalize the Tsuneishi area. Also we found their problems have structure as shown in below. Transportation issues are root problem in this area.

<table>
<thead>
<tr>
<th>Kind of requirements</th>
<th>Content of requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function of requirements</td>
<td>This system shall make transportation comfortable for elderly and children</td>
</tr>
<tr>
<td>Function of requirements</td>
<td>This system shall make education comfortable for Tuneishi residents</td>
</tr>
<tr>
<td>Function of requirements</td>
<td>This system shall make shopping comfortable for elderly and children</td>
</tr>
<tr>
<td>Function of requirements</td>
<td>This system shall make land use comfortable for Tsuneishi residents</td>
</tr>
<tr>
<td>Function of requirements</td>
<td>This system shall make communication comfortable for Tsuneishi residents</td>
</tr>
</tbody>
</table>

Table 3·2 Requirements for revitalizing the Tsuneishi area
Fig. 3-1 Structure of Tsuneishi’s problems
4. Analysis and Discussion of ALPS Methods

1.1. Mind Map – When did you use this and how was it useful?

Fig. 4-1 Mind Map

We use “Mind Map” to find out how we can solve the problem of *Tsuneishi* community. To revitalize the *Tsuneishi* community, we divided the way to solve for 4 parts, community, we di, Shopping, Education, Land usage.

1.2. Project Priority Matrix - How did you choose what is constrained, optimized, accept?

Table 4-1 Project Priority Matrix

<table>
<thead>
<tr>
<th>Feature</th>
<th>Constrain</th>
<th>Optimize</th>
<th>Accept</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td></td>
<td>○</td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>○</td>
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</table>

Our proposer company, *Tsuneishi* HD, is located in Hiroshima Prefecture. We have to go far to *Tsuneishi*. So, time is most constrained. We had a huge budget (¥100 million!!), so cost is Acceptable.
1.3. Scenario Graph - Explain how you brainstormed and selected your scenario(s).

Table 4-2 Scenario Graph

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</tr>
</tbody>
</table>

We brainstormed and detailed the events [“Who, What, Where, When, How, Why”]. And we used excel to make the scenario in random order.

We selected the scenario as the following order.

- Does it have a reality? [in a cost and resource ]
- Is it interesting?
1.4. CVCA - While summarizing what you found by doing this tool - explain how you found those. Pay particular attention to any new stakeholder that you discovered.

Fig. 4-2 CVCA ver.3

We changed our “CVCA” for 3 times.

First, we had wrong stakeholders.

Second, we misunderstood the relations between Tsuneishi HD and Tsuneishi people. We thought that there were no relations. (But there were relations.

Finally we found out the right relations from the Interviews. Tsuneishi people hoped Tsuneishi HD to solve the problem to revitalize Tsuneishi community.

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

<<About traffic>>

- Difficulty in going to school
  - Too expensive
  - Poor transportation
    - Don’t come at short intervals
    - Finish early
- Need a car to go around
- Traffic jam
- Bad manner at driving
• Road isn’t good at driving: narrow road
• Dark road

<<About shopping>>
• Can’t do shopping with a light heart
  – Have to take a vehicle
• Main shopping center is located at center city
• Not easy at bringing the package for elder people
  – Elder people live in mountainous region
• Using COOP
  – Can’t decide the menu from day to day
• Using shopping help bus
  – Weak sustainability

<<About education>>
• Poor level at learning
  – Few school left
  • Students decrease
  – Top level school is only located at Fukuyama city center
• Few space at playing outdoors

<<About land>>
• Hang on their premises
  – Newcomer can’t live
• Few space left to park
• Poor sewage improvement
• Poor condition
• Good temperature to live

<<About communication>>
• Poor communication: generation gap
• Information about Tsuneishi
  – Want more information from Tsuneishi
• Young people don’t join in the event at Tsuneishi...
• We use “Shopping-Support Bus (Kaimono Shien Bus)” to communicate with the others.
  – Want more opportunity to communicate.
• Should use community center.
  – Want young people and Tsuneishi member to come...
• Want a opportunity to exchange of opinions with *Tsuneishi* member.

We went *Tsuneishi* for 6 times and interviewed 90 people who lived in *Tsuneishi*. We did it to figure out the **NEEDs** to revitalize the *Tsuneishi* communities.

First, we thought that the problems we have to solves are “Transportation, Shopping, Education, Land usage”, but after the Interviews, we found out the new problem, “Communications”.

1.6. Scenario Prototyping Rapidly – What did you try to test?

![Prototype](image)

**Fig. 4-3 Prototype**

We used this Prototype [Fig. 4-3] when we had Interviews to stakeholders. We had a lot of opinions from them [1.5].
1.7. Value graph - What's surprising?

We could organize the value and found out that “On-Demand Bus & Shopping System” solves “Transportation, Shopping, and Land Usage” problems.

1.8. Function-Structure map - Explain the items that are connected more than others and whether that matches your expectations?

We could use “Function-Structure map” when we focused on “On-demand Bus and Shopping System”. We could organized the sub-systems to solve the Tsuneishi problems.
1.9. Design of Variety

Fig. 4-6 shows this system’s components. This system is made of some existing and variety components. We appropriate components from function for realizing operation scenario. So this system is very feasible and has low development cost.

1.10. Environmental Complexity/Recyclability

In this system, scope of application is local area that is TSUNEISHI region. So this system analysis is a little different from general CVCA, QFD, and CWA because we have to consider local individuality. Resident of TSUNEISHI area can be divided by generation. Many elderly people is feeling benevolently. But many young people is unconcerned. There is a wide divergence of opinion among each generation. By considering each generation, we got data correctly for CVCA, QFD and CWA.

1.11. Serviceability

We have main 5 modes are membership, activation of communication, transportation, shopping (incentive for user) and source of earnings in this system. Most important modes
are 2 modes are activation of communication and transportation. Their modes are solution of TSUNEISHI’s problems. But their modes needs to be treated about matter of mode operation by other mode. Therefore we added other 3 modes because most important 2 mode are treated.

Table 4-3. Type of mode

<table>
<thead>
<tr>
<th>Mode</th>
<th>Function of mode</th>
<th>role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode1</td>
<td>Transportation</td>
<td>Solution</td>
</tr>
<tr>
<td>Mode2</td>
<td>Activation of communication</td>
<td>Solution</td>
</tr>
<tr>
<td>Mode3</td>
<td>Membership</td>
<td>Treat mode 1, 2</td>
</tr>
<tr>
<td>Mode4</td>
<td>Shopping (Incentive for users)</td>
<td>Treat mode 1, 2</td>
</tr>
<tr>
<td>Mode5</td>
<td>Source of earning (Incentive for operator)</td>
<td>Treat mode 1, 2</td>
</tr>
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</table>

1.12. Quality Scorecarding

We defined some parameter and transfer function as quality scorecarding.

Biggest Y : Population of Tsuneishi area

Big Y : Activation of Tsuneishi area : Convenience of Trasnportaion, Education, Shopping and Land usage.

Important X : Meaning of transportation, providing opportunity of communication, number of house, number of parking

Noise Z : Economic condition, Declining Birthrate and Aging Population, Disaster

Transfer function : Analysis of population

1.13. Design of experiment

Table 4-5 is Requirement and V&V Matrix shows relationship between requirement and V&V plan. Basically Verification plans are made of Observation. But we did not decide criteria for verification because this criterion depends on current condition. And Validation plans are made of Questionnaire.

1.14. Design Structure Matrix

Our system is social system using Technology. Although our system have Technical system, in this time mainly our proposal is Architecture of social system. Therefore we can not use this method for detail of our system. So we show Design Structure Matrix for general system design we can use.
Table 4-4. Design Structure Matrices

<table>
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Item list

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<tr>
<td>1</td>
<td>Requirement of mission</td>
</tr>
<tr>
<td>2</td>
<td>Most important requirements</td>
</tr>
<tr>
<td>1</td>
<td>Function of requirements</td>
</tr>
<tr>
<td></td>
<td>Function of requirements</td>
</tr>
<tr>
<td></td>
<td>Function of requirements</td>
</tr>
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<td>1</td>
<td>Function of requirements</td>
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<td>Function of requirements</td>
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<td>Function of requirements</td>
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<td>2</td>
<td>Function of requirements</td>
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<td></td>
<td>Function of requirements</td>
</tr>
<tr>
<td>3</td>
<td>Function of requirements</td>
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<tr>
<td></td>
<td>Function of requirements</td>
</tr>
<tr>
<td>4</td>
<td>Function of requirements</td>
</tr>
</tbody>
</table>
1.15. QFD

This is QFD for our system. QFD result shows time to destination and distance to bus stop are key quality metric in transportation system design.

Table 4-6 QFD phase I

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Weight for customers</th>
<th>Industrial Metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td>be easily accessed</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>safe</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reliable</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>not far from house</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>make a periodic</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Score: 36 18 108 93
Relative Score: 0.1 0.1 0.4 0.4

Table 4-7 QFD phase II

<table>
<thead>
<tr>
<th>Industrial Metrics</th>
<th>Weight by I</th>
<th>Parts Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Features</td>
<td>0.1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Money</td>
<td>0.1</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Distance</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Time</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

Score: 2.2 0.6 7.3 1.9 1.5
Relative Score: 0.2 0.0 0.5 0.1 0.1

---
5. Design Recommendation

After several visits to Tsuneishi Area, we have found out that there is a strong demand for convenient local transportation system. We have thus proposed “Tsuneishi Hichlife System,” which resolves transportation issues of Tsuneishi area. In addition, we have carefully designed the system to enhance communication among Tsuneishi people, because we learned that there are potentially strong ties in Tsuneishi community but that communication among sub-community is not active: e.g. among different generations, among people from different small areas and among Tsuneishi people and Tsuneishi holdings. We believe that revitalizing local community requires active participation of local residents and that activation of communication among them is essential. We believe this system would help Tsuneishi people to understand their local area and local community well and hope that they will revitalize Tsuneishi area on their own. Fig. 5-1 shows “AS IS” of Tsuneishi area and Fig. 5-2 shows “TO BE” of Tsuneishi Area.

Fig. 5-3 Tsuneishi Area “As Is”
Please note that we have designed the system to minimize the initial investment and to balance revenue and expenditure, because the current Tsuneishi population is not large enough to have effective investment. We have also included several sub-systems which make the whole system more attractive and help increase revenue. We believe this proposal will be effective for establishing “Smarty Cities” suited for Japanese rural areas.

1.1. Overview of Tsuneishi Hitch Life System

Fig. 5-3 and Fig. 5-4 show the overview of “Tsuneishi Hitch Life System.” As stated in the previous section, the system has been designed both to improve local transportation system and to enhance communication among Tsuneishi community. For the transportation part, we have proposed a system based on “Hitch Hiking.” This is intended to complement existing transportations system such as taxies and on-demand bus system which Tsuneishi holdings is planning to introduce. For the communication part, the system provides social events where the users of the system can familiarize each other. The system also provides SNS system for local residents and conventional communication channels including F2F, telephone, message boards, etc can be utilized. And system use case is attached to Appendix.
The following is a short description of Hitch-Hiking usage, which is the core concept of the system.

- User (needs registration, needs fee)

A user can subscribe the system to get a user card. By presenting the card to a driver and
if negotiation can be made, the user can ride the car. The user can earn usage points, which can be later changed into regional currency.

- **Driver (needs registration, no fee)**
  A driver subscribes the system and gets a driver card. When a user presents a card to the driver, the user and the driver negotiate the destination. If the negotiation is made, the driver takes the user to the destination.
  A driver can get re-imbursement for car insurance, to promote the usage of the system and to increase safety. The user can earn usage points, which can be later changed into regional currency.

- **Tsuneishi Hitch Life System Corporation (Tentative name)**
  A company to manage the entire system, including membership management, regional currency management, etc.

- **Affiliated Shops**
  Tsuneishi area shops participating in this system. When a user and a driver shops at one of the shops, they can get discounts. The shops accept regional currency.

- **Hitch Life Network**
  A social network among participants of the system managed by Tsuneishi Hitch Life System Corporation. The participants can know each other well. At social events, the participants can sell/buy local products.

### 1.2. Revenue Model

Qualitative analysis of the revenue model is shown in Fig. 5-5. It should be noted that the system fully utilizes currently available resources (Fig. 5-6) and that the initial investment can be made minimum.
## Qualitative Revenue/Expenditure Analysis

<table>
<thead>
<tr>
<th>Income</th>
<th>Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in sales of affiliated shops</td>
<td>Partial payment of drivers’ car insurance</td>
</tr>
<tr>
<td>Increase in the sales of insurance</td>
<td>Membership Management</td>
</tr>
<tr>
<td>Increase in the sales of gas</td>
<td>Regional Currency Management</td>
</tr>
<tr>
<td>Membership Fee</td>
<td>Reward for Artists who prepare advertisement</td>
</tr>
<tr>
<td>Advertisement</td>
<td>Management fee for sales in the car</td>
</tr>
<tr>
<td>Commission for sales in the car/social events</td>
<td>Social Event management</td>
</tr>
</tbody>
</table>

**Fig. 5-7** Revenue model of Hitch Life System

### Using of existing systems...

#### Hitch Life System
- **Tsuneshi Hitch life Community, Inc. (THLC)**
  - Hitche Life Activities function
    - This function presents a suitable means of transportation.
  - Member control and insurance function
    - This function manages member information and insurance.
  - Social network function
    - This function uses the existing SNS.

#### Commercial function
- This function runs advertisements in the car etc.

#### Call center function
- This function carries out conversion between digital information and analog information.

#### Ready made communication tools
- **TSUNEISHIH HD.** (Company of TSUNEISHIH GP)
  - Public function
    - This function extends and uses the information system of the existing company.
  - On-demandBus function
    - This function extends and uses the Bus system of the existing company.
  - PC Mobile phone
    - Circular, News board and so on
    - Digital Communication function
  - Analog Communication function
  - Hitch life Car
    - High hike car function

**Fig. 5-8** Components available for Hich Life System
1.3. Description of subsystems

This section describes add-on sub systems which make the entire system more attractive and improve profitability.

1.3.1. Sales/Advertisement in the car

This subsystem is intended to promote business in the cars used for hiking. Local goods can be sold in the cars and this promotes local production/local consumption in Tsuneishi area. Advertisement can be made inside the cars. The overview of the subsystem is shown in Fig. 5-7 and an example of advertisement in the car is shown in Fig. 5-8.

![Overview of "Sale in the car" and "Advertisement in the car"](image)

**Aim of this subsystem**
- Incentive for drivers
- Promoting local communication
- Preserving local culture (local production and local consumption)

Fig. 5-7 Overview of Sales/Advertisement in the car
1.3.2. “Art on the car” subsystem

This subsystem is intended to increase revenue by placing artistic advertisement on the cars. This could be more effective if the advertisement is created by younger artist. Such cars with advertisement can be an appealing to wide variety of people and can be an important sightseeing resources. We should also note that this subsystem would supports younger artists’ activity. In addition, if we sell a car with advertisement at a lower price, drivers might be willing to drive such “eye-catching” paintings. The overview of the system is shown in Fig. 5·9.
1.3.3. EV experiments

Tsuneishi holdings is making an intensive experiment on Electric Vehicles. Incorporating those vehicles in the Tsuneishi High Life system will be an effective experiment for the entire system. This could also be a good starting point to start exploring “Smart Tsuneishi” with renewable energy.
1.4. Cover range of Transportation system

Recommendation System is one of transportation system. The cover range is decided on User Density and Trip Distance\textsuperscript{[2]}, show below fig.

Fig. 5-11 Cover range of Transportation system

[2]をもとに作成
6. Competitive Analysis

Our business model is “Public Transportation operated by residents themselves”. Income resources are advertisement revenue and registration fee. The initial cost is very low because we use existing resources such as SNS and the bus already operated inside the Tsuneishi HD factories. Required investments are new local event and issue of local currency. NPV for 5 years is 144,691yen. Our systems main goal is Tsuneishi area revitalization and required cost structure is balance of income and expense. Result of NPV analysis shows that our proposed system satisfied our criteria. Table: NPV

<table>
<thead>
<tr>
<th>Income</th>
<th>Outcome</th>
<th>Cash Flow</th>
<th>NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ad revenue</td>
<td>240000</td>
<td>500000</td>
<td>1000000</td>
</tr>
<tr>
<td>Registration Fee</td>
<td>48000</td>
<td>100000</td>
<td>200000</td>
</tr>
<tr>
<td>SNS (e.g., Facebook)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Local event</td>
<td>100000</td>
<td>100000</td>
<td>100000</td>
</tr>
<tr>
<td>Changing Local Currency</td>
<td>259200</td>
<td>540000</td>
<td>1080000</td>
</tr>
<tr>
<td>Total</td>
<td>-59333.333</td>
<td>-27777.8</td>
<td>11574.07</td>
</tr>
</tbody>
</table>

Table 6-2 forecast assumption

<table>
<thead>
<tr>
<th>Registrant</th>
<th>1000 members (30% of the population) for 5 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratio of car holders</td>
<td>80%</td>
</tr>
<tr>
<td>Use frequency</td>
<td>120 freq/year person</td>
</tr>
<tr>
<td>Amount of Local Currency</td>
<td>21600yen/year person</td>
</tr>
<tr>
<td>Ratio of Local currency used</td>
<td>25%</td>
</tr>
<tr>
<td>Ratio of cooperator Ad car</td>
<td>5%</td>
</tr>
</tbody>
</table>
7. ALPS Roadmap and Reflections

Our roadmap is following: Fig. 7-1.

---

Fig. 7-1  Roadmap of ALPS tools

First, we got requirement analysis. Before VOC & VOX, we thought if we create communities with diversity, Tsuneishi community will revitalize. From VOC & VOX, we found out that there are 4 problems to revitalize the Tsuneishi communities. The
problems are lack of “Transportations, Shopping, Educations, and Land Usage”, not only about population decreases or less diversity. This is our “Aha” experience.

In the process of “2 Architecting & Design”, we felt Oops from fieldwork. There are lots of existing assets, so we tried to use these: the local communities, public hall and services. From this, we can reduce our initial costs. And the transportation problem is the biggest one; we designed our system focused on “Transportation”.

Finally, we found out! There is fifth problem, lack of “Communication”. This is our Eureka experience. So we re-designed the system focused on “Communications and Transportations”.

We re-designed our system for several times, so we re-acted process 6 to process 7 for several times.

![Diagram of Hitch Life System]

Fig. 7-2 the history of our system

<table>
<thead>
<tr>
<th>Table 7-1</th>
<th>difference of each systems</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>traffic</td>
</tr>
<tr>
<td>On-Demand Bus</td>
<td>○</td>
</tr>
<tr>
<td>Shopping-Whenever</td>
<td>○</td>
</tr>
<tr>
<td>Hitch Life</td>
<td>○</td>
</tr>
<tr>
<td>Hitch Life Community</td>
<td>○</td>
</tr>
</tbody>
</table>
We changed our system about transportations for 4 times.

First, we designed “On-Demand Bus” system. Using this system, we don’t have to use a car, so we thought the space of car parks can reduce. But from the voice of Tsuneishi people, shopping problems are needed to solve.

We improved our system to “Shopping Help System- Shopping Whenever”. We could solve the shopping problem from this, but this system didn’t have enough sustainability. It is unprofitable.

We improved to “Hitch Life” system. This system solves “Communication” problems. But we thought the communications will not be active so decided to change again.

Finally we arrived to “Hitch Life Community” system. We took “Pugh concept selection” and joined our systems.
8. Conclusion

We proposed the new system make Tsuneishi HD sustainable for 100 years with TSUNEISHI region and residents, covers following two points.

- Our proposal is Regional revitalization of the TSUNEISHI area.
  - We proposed “Hitch-Life Community” systems
  - We strategically architected subsystems such as EV experiment, Regional Currency, in car “News board” community

- Our proposal which are NOT “policy without software (ハコモノ)” and “technical unbalance (技術偏重)”
  - We recovery and sustain “relationship” (=social capital)
  - Our proposal is Global innovation not from the Tokyo but from TSUNEISHI.
  - Our proposal is towards the global level trendsetting center of art or EV technology.
  - In our proposal Transportation and Communication together support to solve issue.

9. Future Work

We carry out questionnaires survey to have a response from Tsuneishi people. 150 people answered. From this questionnaires, we understood Tsuneishi residents need to revitalize the Tsuneishi area and most important problem is transportation. So our system’s target is correct. But we also understood our system has some problems such as safety. In order to realize our system, strengthening an insurance system or strengthening the means for activation of communication are required.

Q. Do you think Tsuneishi have to revitalize the communities?
A. Over 80 % people thought they need to revitalize their community.
Q. What do you want? What facts is lack to revitalize Tsuneishi community?
A. Transportation is most needed. But from the Interview, we found out communication is most needed in deep layer. So we tried to build the system which focused on transportation and communication.

Q. Why don’t want to use?
A. The drivers are afraid of their safety. So we tried to develop the system which all people can feel safe.
Q. When do you want to use?
A. Almost people answered they want to use instead of public transportation service: when go to school, shopping or hospital. And they answered they want to use this system for 1 time per week.

Fig. 9-3

Fig. 9-4

Fig. 8-5 is 100 year grand design for TSUNEISHI Area. In terms of 5 problem, we propose ideal situation for TSUNEISHI area. We hope our proposal become trigger of TSUNEISHI development.
Fig. 9-5. 100 year grand design for TSUNEISHI Area

Summary of proposal so far
Acknowledgment

Tsuneishi Holdings has been always supporting us during the project. We would like to thank President Kambara for proposing the project topic. In particular, we would like to thank Mr. Kanemasa, Ms. Imoto, Ms. Ikeda, Mr. Yamamoto and Mr. Watatani, who have been always with us at ALPS workshops and while we visited Tsuneishi. Thanks are also to Tsuneishi people, including Tsuneishi community center, who helped us understand Tsuneishi well and spent lots of time discussing issues in Tsuneishi. SDM people, particularly Assistant Professor Tohse and Professor Yasui, gave us insightful comments and support. We would like to express our deep gratitude for all who helped us.
Reference

1. 元田良隆ら: DRT（デマンドバス）に関する幾つかの考察, 土木計画学研究・講演集,No31 ,2005 年 6 月

2. 元田 良孝 (著), 上田 敏 (著), 岩立 忠夫: 交通工学 森北出版

3. Clavel, Robert, Legrand, Philippe: Le covoiturage dynamique -tude pre alable avant expe rimentation-

4. TSUNEISHI HD: http://www.tsuneishi-g.jp/


11. 福本雅之, 加藤博和: 適材適所となる小需要乗合交通サービス提供に関する基礎的検討, 土木計画学研究・講演集, 2005

12. 若菜千穂, 原文宏, 佐藤徹也: 畿広市農村部における DRT（デマンドバス）の 2 つの運行シ ステム, 土木計画学研究発表会・講演集, 2005

13. 森山昌幸, 宮地岳志, 藤原章正: 中山間地域における DRT 導入効果の分析, 土木計画学研究・講演集, 2005 年

14. 秋山哲男: タクシー・ST サービスの交通政策・交通システム, 土木計画学研究発表会・講 演集, 2005

15. 磯部友彦: 地域交通の新しい形への挑戦-愛知県小牧市桃花台地区の乗合タクシーやミゴンを事例に-, 土木計画学研究・論文集, 2006
Appendix
This is our system’s usecase.

System Use case 1
Member registration

Use scenario
Passengers registration
1. Passengers apply for this system and be evaluated.
2. Passengers apply for insurance for some trouble.
3. If accepted, passengers receive Members card and start to use this system.

Driver registration
1. Drivers apply to this system and be evaluated.
2. Drivers apply for insurance for some trouble.
3. If accepted, drivers receive Members card and start to use this system.

System Use case 2
Activation of communication

Use scenario
Passengers
1. Passengers offer to use transportation via PC or phone or circular and so on to THL.
2. THL look for appropriate transportation for passengers.
3. THL advance appropriate transportation and tell passengers meeting point.
4. Passengers use transportation advanced

Drivers
1. Drivers are offered to take on passengers by THL and THL tell drivers meeting point.
2. If drivers assented, drivers go to meeting point take on passengers.
   (As is obviously, passengers can also use Hitch hike directly.)
System Use case 3
Transportation

Use scenario
COM between SNS and Real
(For example other generation communication)
1. User write some message to other users on SNS (or other digital tool).
2. Call center translate to Analog com tool (phone, circular or notice board and so on).
3. User can communicate with Analog tool user.
4. And if User want to directly meet to communicate with other user, User can use transportation of this system.
5. And THL also introduce appropriate person you want.

System Use case 4
Use as a mean of shopping use case
Incentive for User

Use scenario
Receive Community money
1. When driver took on passenger, deliver receive Community money from THL.
2. Community money is saved in user’s account.
3. Driver can use Community money at shop in Tsuneishi region.

Sales aboard a car
1. Shops in Tsuneishi region offer to sell something to THL.
2. THL offers to sell something to drivers.
3. Drivers sell something to passengers.
System Use case 5
Use as a source of earnings use case
Incentive for TSUNEISHI GP

Use scenario
Run the advertisement
1. THL is accepted an order about commercial from company wants to merchandise.
2. THL orders the advertisement to young artist and so on.
3. THL orders to run the advertisement to users(for running the advertisement in the car or outside car), Analog communication tools(circular and so on), Digital communication tools(start page of wifi internet and so on).
Group M’s Final Presentation Slides
The Voyage for the Next 100 Years
~To revitalize the Tsuneishi community~

~EN-gine to Sail for the Coming Chartless Century~
“EN-couragement, EN-gagement, EN-powerment”
Endeavor for Empathy endues the Community-Enhancement.

E.IKEDA, K.TANAKA, S.SUZUKI,
T.HARADA, Y.YAMAMOTO, A.ATARASHI
Keio University / Graduate School of System Design and Management

Contents
• History of the our project
  – The requirements…
  – What we have done is…
  – What is the issues of Tsuneishi?
    • From the Interviews ~what do they want?~
    • From the questionnaires ~what do they want?~
  – The system to solve the problems
    • …
• To solve the issues
  – The details of new system
    • Overview/CONOPS
• For next 100 year
  – Conclusion

The requirements
• How to produce synergy effects and activate the social life in the local area? (共力: Synergy)
• How to inspire the local people to join the project? (共生: Symbiosis)

What we have done is...
6 visits to Tsuneishi !!

June
• Our project started

July
• 1st VOC
  • Found out the 4 issues (transportation, shopping, education, land use) to solve.

August
• Show our prototype 1st: Restructured new system.
• 2nd VOC: Found out the fifth issues >> lack of communication.

September
• 3rd VOC
• Show our prototype 2nd: Re-designed new system.

October
• Questionnaire to Tsuneishi citizen and Tsuneishi member.
• Re-designed the new system.

November
• Had a presentation to the Tsuneishi HD and Tsuneishi citizen.
• Re-designed the new system.
From the interviews...

We figured out the NEEDs to revitalize the Tsuneishi communities.

- **Target**
  - Citizen and Tsuneishi member
- **Time**
  - From July, 2011 to October, 2011

<table>
<thead>
<tr>
<th>Interviewed stakeholders</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citizen (Adult) at Tsuneishi</td>
<td>30</td>
</tr>
<tr>
<td>Citizen (Child) at Tsuneishi</td>
<td>15</td>
</tr>
<tr>
<td>Tsuneishi HD Executives</td>
<td>30</td>
</tr>
<tr>
<td>Officer of the Fukuyama City Government</td>
<td>2</td>
</tr>
<tr>
<td>Officer of the Hiroshima Prefecture Government</td>
<td>1</td>
</tr>
<tr>
<td>Officer of the Kashiwazaki City Government</td>
<td>1</td>
</tr>
<tr>
<td>Others</td>
<td>10</td>
</tr>
</tbody>
</table>

Voice of Customer... part1

<<transportation>>
- Difficulty in going to school
  - Too expensive
  - Poor transportation
- Don't come at short intervals
- Finish early
- Need a car to go around
- Traffic jam
- Bad manner at driving
- Road isn't good at driving: narrow road
- Dark road

<<shopping>>
- Can't do shopping with a light heart
  - Have to take a vehicle
- Main shopping center is located at center city
- Not easy at bringing the package for elder people
  - Elder people live in mountainous region
- Using COOP
  - Can't decide the menu from day to day
- Using shopping help bus
  - Weak sustainability

<<education>>
- Poor level at learning
  - Few school left
    - Students decrease
  - Top level school is only located at Fukuyama city center
  - Few space at playing outdoors

<<land usage>>
- Hang on their premises
  - Newcomer can't live
- Few space left to park
- Poor sewage improvement
- Poor condition
- Good temperature to live

Voice of Customer... part2

<<communication>>
- Poor communication: generation gap
- Information about Tsuneishi
  - Want more information from Tsuneishi
  - Young people don't join in the event at Tsuneishi...
- We use "Shopping-Support Bus (Kaimono Shien Bus)" to communicate with the others.
  - Want more opportunity to communicate.
  - Should use community center.
    - Want young people and Tsuneishi member to come...
  - Want an opportunity to exchange of opinions with Tsuneishi member.

From the questionnaires...

Do you think whether we need to revitalize the Tsuneishi communities?

- **Need to**
  - 29%
- **Want to**
  - 52%
- **So so**
  - 14%
- **Never**
  - 1%
- **Don't have to**
  - 4%

Over 80% people think they have to revitalize their communities.
What we found from there is...

- From the interview…
  - Their needs!! traffic problems and communication
- From the questionnaires…
  - The traffic problems are 1st needs.

Transportation and Communication are core issue!!

Discuss the bus stop location with Tsuneishi people

We solved shopping issues

Not profitable…
The history of our system

Profitability improved!!

Not sustainable…

Activate communication between *Tsuneishi* people

Design the system to solve all 5 issues

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<th>traffic</th>
<th>shopping</th>
<th>education</th>
<th>space</th>
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</table>
Feed back from *Tsuneishi*...

- Comments on *Hitch Life Community System*
  - Idea is good but...lack of details.
    - Sustainability...?
    - Who use this system...?and how many ?
      - Most of *Tsuneishi* people are senior (not enough drivers)
    - How to communicate with each others...?

Feed back from *Tsuneishi*...

- Comments on *Hitch Life Community System*
  - Idea is good but...lack of details.
    - Sustainability...?

So we re-designed our system...

- Most of *Tsuneishi* people are senior (not enough drivers)
  - How to communicate with each others...?
"As is" situation from VOC

In daily life, it is inconvenient for elderly and children in Tsuneishi region. Transportation issues adversely affect to other 4 issues.

"To be" situation

Value of Hitch life community

Main system component

Everyone is friends with “Hitch Life”
Using of existing systems...

System overview

- Tsuneishi Hitch Life community, inc. (THL)
  - New model of local community
  - New communication
  - THD earning
  - regional economic effect

Tsuneishi Hitch Life community, inc. (THL)

Communication System

- Community money
- SNS function
- Art festival function in cars

Transportation System

- Shopping function in cars
- Hitch hike function
- Operation function

TSUNEISHI HD (Company of TSUNEIDHI GP)

SNS function

PC Mobile phone, Circular, News board and so on

- Digital Communication
- Analog Communication

Community money

TSUNEISHI HD (Company of TSUNEIDHI GP)

Hitch hike function

On-demand Bus Community, inc

This function extends and uses the information system

This function carry out network events.

This function presents a suitable means of transportation.

This function manages member information and insurance.

This function manages member information and insurance.

For example

Cooperation of Volunteering (volunteer)

In this system, the user can find a hitchhike partner easily on the internet.

Number of user
1 million domestic user
User 3 major purposes
- cheap, ecology, chance to meet

So, Feasible and Low Development Cost
Main 4 use scenarios

1. Transportation
2. Member registration
3. Activation of communication
4. Incentives

1. Member registration
   “Safe, Secure, and Reliable”
   - Membership system build reliability.
   - Copes trouble by insurance.

2. Transportation
   “Low cost and convenient”
   - User friendly interface: Multiple choice of communication device.
   - Meet their demand: Combination of Taxi, On-demand, and Hitch-hiking
   - Cost reduction for Tsuneishi group by reducing Tsuneishi in-company traffic.

3. Activation of communication
   “Everyone is friends”
   - Activating Communication builds strong ties
     – Activating communications with other generation
     – Networking events
4. Incentive

“This system has many incentives”

- Free of charge for hitchhike
- The driver can get regional currency
- Regional currency activate local economy

• Other option to enhance sustainability
  - Advertisement (ad)
  - Sightseeing

Summary

- Regional revitalization of the Tsuneishi area
  - Proposed “Hitch-Life Community” system
    - Strategically architected subsystems:
      - EV experiment
      - Regional Currency
      - In car “News board” community
    - Proposal which are NOT “policy without software(ハコモノ)” and “technical unbalance(技術偏重)”
  - Recovery and sustain “relationship” (= social capital)
  - Global innovation not from the Tokyo but from Tsuneishi.
    - Towards the global level trendsetting center of an art or EV technology
    - Transportation and Communication together support to solve issues.

Acknowledgements

We gracefully acknowledge the valuable co-operations and supports by the Tsuneishi HD, the proposer of this project, and all related residents of the Tsuneishi.
Special Thanks?

Appendix 1

Detail of Use case

System Use case 1
Member registration

Tsuneshi Hitch Life Community, Inc

From the questionnaires...

Do you think whether we need to revitalize the Tsuneshi communities?

Over 80% people think they have to revitalize their communities.

The students need to spend lots of time for commuting

And elder people have difficulties in shopping – bus stops are far

- From the questionnaires...

- Want to 32%
- Need to 29%
- Sometimes 14%
- Don't have to 4%
- Never 1%
**System Use case 2**  
*Activation of communication*

1. Passengers offer to use transportation via PC or phone or circular and so on (For example other to THL.)
2. THL look for appropriate Specialty Company transportation for Tsuneishi Hitch life Community. inc (THL)
3. THL advance appropriate transportation and tell passengers meeting point.
4. Passengers use on-demand Bus or Taxi transportation of this system.

- **Digital Communication**
  - On-demand Bus function
  - Taxi function
- **Analog Communication**
  - On-demand Bus function

**Ready made communication tools**

**System Use case 3**  
*Transportation*

1. User write some message to other users (THL)
2. Call center translate to THD Company Direct meet to communicate with other user, User can use Analog tool user directly)
3. THL also introduce driver to meet to communicate with other user, User can use Hitch hike function directly)
4. And if User want to run the advertisement to young artist and so on.

**System Use case 4**  
*Use as a mean of shopping use case Incentive for User*

1. THL is accepted an order about commercial from company wants to merchandize.
2. THL orders the Community money to THL.
3. THL orders to run the advertisement to young artist and so on.
4. And THL also introduce driver to meet to communicate with other user, User can use Hitch hike function directly)

**System Use case 5**  
*Use as a source of earnings use case Incentive for TSUNEISHI GP*

1. Driver take on passenger, driver receive Community money from THL.
2. Community money is saved in user's account.
3. Driver can use Community money at shop in Tsuneishi region.
4. THD Company ready made communication tools(circular and so on)

**Digital Communication**

- Social network function
- Call center function
- Car pool function
- Hitch hike function

**Analog Communication**

- Ready made communication tools
- Digital Communication function
- Public wifi function
- Analog Communication function

**Ready made communication tools**

- Young Artist
- Commercial
- Company
- Sales aboard a car
- Member control
- Car pool function
- Hitch hike function
- Hitch life Community function
- Operational function

**Passenger (User)**

**Driver (User)**

**Tsuneishi Hitch life Community. inc (THL)**

**Specialty Company**

**TSUNEISHI GP**

**THD Company**