Pilot installation of Tele-Center for remote education and health care in Rural Area and isolated Island, in Micronesia

APT ICT development Programme for supporting ICT pilot Project in Rural Areas

KDDI – GITI, Waseda University
Contents

Introduction ........................................................................................................................................... 4

1. Project outline .................................................................................................................................. 5
   1.1. Objective of the Project .............................................................................................................. 5
   1.2. Project Implementation Site ..................................................................................................... 6
   1.3. Partners and cooperation model ................................................................................................. 6
       a. Project Members list ................................................................................................................. 6
       b. Organizational Structure ........................................................................................................ 7
   1.4. General Plan for the Project ..................................................................................................... 9

2. Project implementation ...................................................................................................................... 10
   2.1 Network design .......................................................................................................................... 10
   2.1 Installation Phase ...................................................................................................................... 10

3. Network infrastructure ..................................................................................................................... 12
   3.1 Network Design ........................................................................................................................ 12
   3.2 Installation Phase ...................................................................................................................... 14

4. Application ......................................................................................................................................... 16
   4.1. e-Health application(Required) ............................................................................................... 16
   4.2 e-education application ............................................................................................................. 16
       4.2.1 Basic application ............................................................................................................... 16
       4.2.2 Class application .............................................................................................................. 17
   4.3. Recommendation of COP by Dr. Saga .................................................................................... 18

5. Inaguration ceremony and Financial Support .................................................................................. 20

6. Workshop and training ..................................................................................................................... 22

7. Initial resulat from using personal computer in FSM ....................................................................... 22

8. Future development and sustainability ............................................................................................ 23
   8.1 Sustainability .............................................................................................................................. 23
       8.1.1. Sustainability .................................................................................................................. 23
       8.1.2. Operation and maintenance ........................................................................................... 23
       8.1.3 Development .................................................................................................................... 23
8.2 Recommendation for sustainability ................................................................. 24

9. CONCLUSION ....................................................................................................... 24

10. Acknowledgement ........................................................................................... 25

APPENDIX

A1. APT Micronesia Project Report ........................................................................ 36
A2. Network configuration ...................................................................................... XX
A3. Fedora10.2_Server_User_Guide.pdf ................................................................. XX
A4. General Maintenance guide .ppt ...................................................................... XX
A5. Linux_basic_knowledge_and_Server_maintenance.pdf ................................ XX
A6. Micronesia Tele-center Project.ppt ................................................................. XX
A7. Report on the Training component of the APT Project ................................. 88
INTRODUCTION

The Federated States of Micronesia (FSM) has a plan and issue regarding resolution of lack of ICT literacy in nation wide. The demand of people also increasing in recent very much.

According the budget constraint, lack of practical experiments in area of the realization to be grown ICT literacy in nation wide, FSM has acknowledged the APT HRD/ICT programme contributes to obtain the solution with high efficiency and effectiveness at the FSM situation. Therefore, FSM submitted these applications to APT in past several years.

The FSM submitted proposal to APT in the past for cooperation to establish those telecenters but it was not materialized. This is the third time for FSM to submit such application requesting ICT Pilot Project. The first time application for ICT Pilot Project (J3) in 2006 was converted to a Joint Study Project (J2) to create development model of School-based Telecenter for Rural Areas in FSM. The second in 2007 was not approved, but an Expert Mission for project formation was sent by the APT to FSM.

During the past two years of joint study and investigations by the APT Expert Mission, FSM came out with policies and procedures on how to organize and implement sustainable rural ICT projects. Considering Expert Mission investigation results, recent experience in the country, and lessons learned from other APT member states, this project is worked out to materialize sustainable telecenters, achieving social development introducing ICT in the daily life of rural inhabitants.

Considering the situation in the past, the FSM has the following strong points worth to note.
1. FSM Telecom Corporation (Telecom carrier) will play an active role to the project contributing to establish communication lines to pilot project sites.

2. Remarkable progress in raising awareness and support of National and Local Governments, and also Community leaders and school teachers at pilot project sites.

3. KDDI with their prior experiences of APT's J3 and J2 projects will play as the Japanese partner company, and provided advise in the planning process of this project proposal.

4. FSM will avail “Used PC Donation Program”, of KDDI to receive a number of PCs for the pilot project sites.
5. Rapid expansion of mobile phone network to pilot project sites, some areas of the villages will have cellular phone service within two years.

6. These telecenters when completed will be models for other rural areas of FSM as well as for other Pacific Islands countries with similar environment.

This document has an APPENDEX which includes all of details of implementation work through the project. Those contents were written by the expertise of at each section. So we were forced to separate those huge pages apart from the main body to describe with many details about our activity.

1. PROJECT OUTLINE

FSM will establish one Community-wide Telecenter at Madolenihmw Municipality in Pohnpei State and two School-based telecenters at Walung village in remote rural areas of Kosrae State and at Tonoas Island Chuuk State, under an APT Pilot Project scheme (J3). At all sites, access points to the Internet will be installed with broadband wireless device.

The objective of this pilot project is to create development model of telecenter in widely scattered islands area of FSM which is common in many Pacific Islands countries. Realizing broadband access, this project will provide the benefits of ICT for people in rural and remote islands areas.

Major objectives are to introduce human resources capacity building through educational use of ICT, to improve living conditions by introducing e-Health, e-Commerce and other applications.

One Community-wide telecenter will be established at Madolenihwm Municipality in Pohnpei Island. At Madolenihmw High School, the Municipal Office and the Dispensary, broadband access lines will be provided with broadband access lines under the concept of “Community-wide Telecenters”. One School-based Telecenter will be established at Walung Elementary School in Walung Village of Kosrae State. The other School-based telecenter will be established at Sino Memorial Elementary School in Tonoas (Dublon) Island in Chuuk State.

1.1. Objective of the Project

Community-wide telecenter will be able to provide various ICT applications such as educational enhancement of student knowledge and ICT skills at school, introductory ICT education and training to community people, business practice using ICT such as e-Commerce at Municipal Office telecenter and e-Health practice at dispensary.

School-based telecenter at local and remote elementary school will raise awareness of ICT literacy to school teachers, students, community leaders and general public. This will become
test-beds for FSM to practice how to realize benefits of ICT for all people in FSM. How to manage telecenter is another important issue to encourage and facilitate business mind of community leaders. Powerful leadership with careful management is the key factor for the successful implementation of this pilot project. Establishment of steering committee and coordinating group both at national level and local level, is essential for successful implementation and operation of this project.

1.2. Project Implementation Site

Pohnpei state (Network and tele-center configuration)
Madolenihmw is a rural community about 30 kilometers away from the capital of Pohnpei. Madolenihmw High School is located in the proximity of municipal office, a dispensary and police Station. Power supply is available and recently the FSM Telecom has installed a WIFI hotspot that covers the area including the high school and the elementary school.

Chuuk State (Sino Memorial Elementary School)
Sino Memorial Elementary school is located on an island having no available infrastructure. There are no organized library facilities. The books and supplies are very limited and not available in many cases, especially for island within the lagoon and the outer island. No suitable access by boat and limited road access within the island.

Kosrae State (Ealung Elementary School)
The Walung Elementary School is located in Walung Village, Tafunsak municipality on the south west peninsula of he main island of Kosrae. Walung Elementary school enrollment is about 75 students and the school and the state Dept of education (DOE) controls the curriculum and the textbooks. There is no extensive library setup but the school library room is used as the computer classroom. The telecenter design for Walung should include wireless Internet access, wireless LAN, battery system for charging from the existing generator setup.

1.3. Partners and cooperation model

a. Members list

Followings are organization of the Partnership and the Corporation for this project.

[FSM side]

1. Department of Transportation, Communication and Infrastructure (DTC&I)
2. Department of Education (DOE)
3. Department of Health (DOH)
4. State Department of Education in Pohnpei, Kosrae and Chuuk State
5. FSM Telecommunications Corporation (FSMTC)
6. College of Micronesia

[Japan side]

1. KDDI
2. Waseda University
3. Expertise of the last expert mission

[Key persons in the Organization of this project are]
1. Applicant and chief
   Dept. (Ministry) of Transportation Communication and Infrastructure
   (TC&I), Federated States of Micronesia
2. Accounting Manager
   KDDI Corporation

b. Organizational Structure
Below figure shows of the rolls, responsibilities and relationship for this project; Needless to say, we had organized the steering committee both to enhance and to make progressively the project with smoothly.
Figure 1. Role sharing and cooperation formation
1.4. General Plan for the Project

Upon discussion and through on-line meeting including all concerned participants, we had made a Planned Schedule (2008-2009) as follows:

**2008**

- **July**: System Design and estimation
- **August**: Proposal to APT
- **September**: NONE
- **October**: Selection by APT
- **November**: Starting the project
  - Paper work for this project in FSM and Japan
  - Coordination of the Steering Team in FSM
  - Network through Satellite between islands in FSM
  - Installation of access lines at each sites
  - Completion of these Point of Interface at the telecenters
- **December**: Technical trial/site survey in FSM with Japanese team

**2009**

- **January**: Preparation
  - Detail system design
  - Work flow and roll in installation (also operation period)
  - Procurement
  - Device for Access network, LAN and miscellaneous
  - Solar Panel and related things
  - Shipping
  - Used PC from Japan
- **February**: Reporting
  - (Interim: Activity and Account)
- **March**: Installation
- **April/May**: Preparation for improvement and training
- **June/July**: Improvement / Training / Education
- **August**: Presentation ADF
- **September**: Spare

- **October**: Spare
- **November**: Reporting
- **December**: (Final: Activity and Account)

Due to the delay of construction under infrastructure of telecommunication FSM concerning this project, APT kindly advised all parties that closing date both for final report and accounting report should be postponed. Hence Due date of final activity
report will be end of November, and the financial accounting report will be end of December this year.

2. Project implementation

2.1. Site Survey
In order to make the effective network and system design in detail, we did discuss the benefit, work flow, educational certificate programme, operation, maintenance as well as management, future plan after project with FSM team and Japanese team through seeing each sites meeting with local people. This is rather technical and daily operation detail view point. It took at about 2 weeks taken into account for on flight schedule. We had done it as it was expected that 2 Japanese expertises would have participated in this mission in Micronesia in December 2008. The details of the site survey was reported in form of result with the J2 project (HRD) in FSM.

2.2. Installation Phase
Installation phase, we expected it would had taken 4 weeks due to 3 separated islands installation and constraint of flight schedules. 4 persons from Japan participated in this phase.

1. Installation Place
   Pohnpei, Kosrae, Tonoas(Chuuk)

2. Installation time schedule
   4 weeks in June 2009 through July 2009
   (About one week for one island)

3. Installation activities are including:
   Network among islands
   Access networks and LAN at each sites in 3 islands
   Configured tele-centers at each sites(including Solar panel)
   Configure and set up each PC at all sites (Including wireless)
   Server installation and configuration
   Application installation and configuration
   Storing contents/material
   Checking each site
   Total system test and evaluation

   Detail in installation work is described in table below in next page.
APT J3 Project Installation-1 schedule focused on Japanese Team activities

<table>
<thead>
<tr>
<th>Days</th>
<th>Date</th>
<th>day</th>
<th>Place</th>
<th>Stay of JPN</th>
<th>Uchiyama</th>
<th>Kaneko</th>
<th>Lin</th>
<th>Li</th>
<th>Activity</th>
<th>Remarks</th>
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<td>ditto, Server setting</td>
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3. Project implementation

3.1. Network Design

With the implementation of this pilot project in Micronesia, FSM can take practical experiments and part of solution for improving local people’s ICT literacy in isolated islands and rural area, and then FSM would step up pilot through nation wide projects based on this results and this pilot system. And more not only within the isolated island but also nation wide network can be applied. There the connection between islands is not satisfied for Internet access, however this problem are now resolved at most part with low cost by putting the server function at each isolated islands. Even in isolated area from Internet where people are away from broadband Internet, it enables to have some level of access to Internet and application/contest such as education. This is some measure to narrow the digital divide in such case of islands area, especially in FSM.

To achieve this aim, we finally made the all hubs on this project network in the rural area as follows:

(see following page)

As we stated the reason in previous pages, some area namely, at Sino Memorial Elementary School site,

They are not provided with electricity, we were forced to equip the Solar panel and its electric power generator system around those areas.

This is an example. We at KDDI always consider anything about sustainability about the system.

Not only solar panels, however at the same time, we put the installation with electric power generator using those panels. This is as of important for future operation in the area.
Basic Network Design at each local site

Basic Configuration at each site

- **Solar Panel Charger**
- **Inverter DC12V to AC**
  \[(300w ~ 1.5Kw) \times (? ) = (\_)\]
- **Deep Cycle Battery**
  \[50Ah/6V \times (4 \text{ or } 6 \text{ or } 8) > 200Ah\]
- **Solar Panel**
  \[100W \times (4 \text{ to } 6) > 500w\]
- **PC/mouse**
- **USB jack**
- **PCI slot**
- **WEB Cam**
- **Headset**
- **Wireless Card**
- **Printer/Scanner/Copy**
- **HUB**
- **WEB Cam**
- **USB jack**
- **PCI slot**
- **UPS**
- **Existing Commercial AC power supply**
- **Projector/Screen**
- **Access Point**

**Sino ES in Tonoas, Chuuk**
- **Fuel (Oil)**
- **Existing Generator**
- **Planned Generator By Kosrae**
- **UPS**

**Waling ES in Kosrae**
- **Existing Generator**

**Hs, ES, and MO in Madolenihmw, Ponpei**
- **UPS**
- **Existing Commercial AC power supply**
3.2 Network Equipment and Materials
The network on this project in FSM, at this time it was provided with the following listed out equipments and materials which are very simple for the maintenance but they are also very sufficient for daily operations.

*Telecenter at each site of FSM telecom office has the following equipment
  - Server (Linux, fedora for mail DNS, web, and the other contents shared)
  - Monitor (TFT)
  - Adequate capacity of the UPS system for in-room computers

*Each School or the office has equipments which are important for e-learning use as well as e-health operations at least.
  - Web Camera and Head Set (Microphone and ear phone) for Internet TV conference
  - Loudness Speaker
  - Personal computers set (Mouse, electric power adapter included)
  - Leaser Printer (Black and White), except for Municipal office
  - Necessary switching Hub and wiring cable
  - Sufficient capacity of UPS system
  - Solar electric power system and its generator (This is for Sino Memorial School only)

Quantity of all equipments depends on the situation at each site. That was decided in the discussion and meeting at site survey, earlier in this year. In addition to this, we have to depict the remarkable comments about such as great deal of cooperation both from FSM whole government officers and FSM telecom engineers. Hence, Poles of radio antenna, Internet environment, electric power generator as well as in-station wiring and computer rooms were provided by local offices of FSM government. These are all as of important for basic infrastructures for the internet environment. We here again have to put our highly appreciation with them on behalf of all steering committees.
System Overview

Satellite

Optical Submarine cable

Between Chuuk and Pohnpei

Planned cable

Between Kosrae and Pohnpei

Truck (Chuuk) Server1 at Telecom

Tele-center (PCs and access NW)

Server3 at Telecom

Parikir/Pohnpei

3 Tele-centers (PCs and access NW)

Server1 at Telecom

Kosrae

Tele-center (PCs and access NW)
4. Applications

4.1. e-Health applications required.

At the beginning of the planning the project, we had considered the e-Health application to install between the hospitals in rural areas. However now it is to be decided as a future expanding plan of other project. At this time, we have to make e-education application as a first priority. We still need to make another investigation if the government offices of FSM are very longing to deal with this issue. However this issue is very critical and is as of important as well as e-education application. Because the best solution with ICT equipments in this project will be totally waste, if they would not have sufficient application contents to learn.

4.2. e-education application.

e-Health application is still under consideration after fixing operations and maintenance matter at each local site. The ICT environment established at this time project has never the aim in which the local children play with the computer to satisfy with their individual interest. The most important things to learn are how to introduce to whole the system for social welfare in the country, of course. Beside e-Health application which is the main application of our system, we also deployed e-Education system that will be linked among the local Tele-center which will be accessed by of local students to the new study materials, distance learning with subjects such as English, Maths, and basic computer literacy and so on can be made possible.

In speaking generally the method we are deliberating on this topics will be consist of two kind of issue in case of this project as following paragraph with which we have ideal achievement on this matter.

4.2.1. Basic applications

Lectures at COM, Pohnpei will be able to provide online learning systems via live video conference to students in the rural area of installed island with the use of Skype Talk accompanied with the equipments such as overhead projector, headsets, webcams, speakers and so on. Teachers and students can ask questions and answers simultaneously. With the internet connection provided, they can search for some learning material online that can improve their teaching and learning. They also can communicate with each other by using emails and share learning materials with the use of our file sharing service.
4.2.2. Class application (A plan recommendation for future use)

Class application is web based e-learning management system should be developed by local staff of steering committee and staff at COM, Pohnpei. With Class application, students and teachers in those remotes schools can register to their favorite class and learn their favorite subjects online, that is through the servers implemented at each Tele-center. It benefits both to students and teacher as follow:

For teachers:
- **Lesson**: Teachers can upload lessons regarding to their own class in different file types such as word document, power point and pdf files.
- **Study plan**: Teachers can post the duration to complete each course which including the started date and ending date.
- **Score**: It enables teachers to evaluate student’s task that their students submitted.
- **Discussion**: Teachers and students in their class can have discussion related to the lesson or the doubtful points that students do not understand.
- **Tasks**: Teachers can post some tasks for students with assigned dateline
- **Short message**: Teachers can send message to other students that are using this System during the hour of the computer class.
- **Chat**: Teachers can have a chat to their students to exchange information Simultaneously during the hour of the computer class.
- **Student Management**: Teachers can view their students’ profile and they can delete students who violate the rules out from their classes.
- **Register**: Teachers can have the rights to decide which students are allowed to register in their classes.

For students:
Before student can have access to their class, first they must register their name in the system and after that they can choose their favorite class to register. They must wait for the approval on their class registration from the teacher of that class. With my class application, students can get the following benefits:
- Students can receive lessons, tasks and give the answer back to the questions that their teachers posted.
- They can have discussion with their teachers
- They can write and send the short message to other classmates as well as their teachers regarding some points that they do not understand in the lesson.
- They can view the information of their class and their lesson
- They can view their score
- They can see profile of their classmates and their teachers
4.3. Recommendation of COP by Dr. Saga.

(COP: Initiation of “Children Online Protection”)

It is remarked that Dr. Saga, Japanese team, member of steering committee stated that role of parents on “Child Online Protection for children.” Guidelines have stressed the important role of parents in many subjects. However, in rural areas of FSM, many people including parents do not have experiences to use PCs in their life. In many cases, school children might become the first user of computer and the Internet in their family. In such situation, parents cannot play their responsibilities identified in Guideline documents. Instead, school teachers’ role will become very important on COP for children and also for community people.

Considering such specific conditions in FSM, I would like to recommend following subjects for your selection of priority subjects from Guideline documents.

1) Guidelines for Policy Makers
   ➢ As many case studies are introduced in Guideline documents, it is crucially important for policy makers and other project members to learn from experiences in other countries and consider how to select and apply each guideline item based on the reality in FSM.
   ➢ These Guidelines have been developed by ITU with the aim to establish the foundations for a safe and secure cyberworld for future generations (child and youth).
   ➢ Step by step approach might be appropriate in establishing policy framework.
   ➢ Before the establishment of legal framework, it might be better to have a trial as test-bed by a consensus base among stakeholders.
   ➢ As our project is a pilot project, it might be appropriate to practice this trial.
   ➢ Basic concept should be that “any act against a child which is illegal in the real world is also illegal in online world.”
   ➢ One of the examples might be the provision of filtering service by FSMTC.
     Regarding “Child Safety Software”, ITU introduced list both “Free Products” and “Commercial Products” in Appendix 3 of “Guidelines for Policy Makers (October 2009)”

2) Guidelines for Parents, Guardians and Educators
   ➢ As I already mentioned, it is not appropriate to rely on parents on COP for children at present.
   ➢ It might be appropriate for project members to focus your policy and action considerations on educators part in school at initial stage.
   ➢ To draft teacher’s guidance and teachers’ training will be an important task for State DOE. Guidance papers for teachers should be drafted jointly at national level and state level through collaborative work.
   ➢ This work should also be developed step by step approach from very simple content (start from easy-to-understand content for teachers). Teacher themselves need to accumulate their knowledge and experiences.
3) Guidelines for Industry
➢ As FSMTC is the monopoly provider for internet access service at present, Government (National DOE and DTC&I), State DOE, COM-FSM and FSMTC should jointly consider whether it is appropriate or not for FSMTC to provide filtering service by user’s choice (like in Japan and other countries). In future, when Government intend to introduce competition in communication and ISP market, Government should put same obligations to new comers.
➢ As for the role of Industry, in future (after the establishment of legal framework), ISPs should work with law enforcement authorities to execute their legislative obligation with regard to illegal content and other user guidelines.

4) Guidelines for Children
➢ “SMART rules” in Guideline document should be included in ICT literacy education at school and tele-center guidance at pilot sites. How to simplify content will be an important discussion point.
➢ Basic rules to use computer room, PCs and other equipments should be posted in computer room.

Conclusion
Although it is essential to consider and practice to realize “safer internet environment for children and community people”, it is important to start from “simple rules” and “easy-to-do” way. It might be appropriate to upgrade the rules after careful watch and examination of the reality in FSM.
Any comment will be welcome from my friends in FSM. I wish to enhance this report through collaborative work.

5. Inauguration Ceremony and Financial support
Financial support from the Governments of FSMAccording with the J2 project report and the expertise mission report, FSM internally discussed of the proposal and support to this project, in addition to the domestic transportation car and gas, FSM, DTC&I coordinated with FSM-TC and make budget for links among each sites of 3 islands for this project and following years, too. This is remarkable topics even also to keep sustainability of this project in the future. We should note this as follows:

1. During the APT Expert Mission activities in February-March, 2008, Expert Mission members together with FSM project members discussed with president and his staff of FSMTCTelecom carrier), Government officials and political leaders including Vice President and Ministers and confirmed that FSM Authorities will cooperate with all possible means to implement the tele-center project under APT programme.

2. National Authorities and the State DOE (Department of Education) assured constant financial support for sustainable operation of tele-center and related activities at pilot schools.
3. Madolenihmw High Commissioner (Mayer of Municipality) assured full support to tele-center operation including providing room space and tele-center instructor.

4. After discussion with the expert team and FSM stakeholders, FSMTC will construct broadband communication lines to pilot sites by its own financial resources. This is an important part of FSM funded financial resources.

5. Collage of Micronesia (COM=FSM) will cooperate in provide training facilities in its campuses.

6. After comprehensive discussions with the school management and the community leaders, project members realized the need for 5 to 20 PCs for each tele-center. Since the number of PCs to be procured under a possible APT pilot project is limited, FSM request Japanese team to consider this situation. According to FSM request, KDDI agreed, if APT approves this J3 proposal, KDDI will donate adequate number of reusable used PCs at each site based on the expert mission report as part of this project accomplishment.

7. The situation in FSM is very different from many other Pacific Island Nations. International Air flight is the only way of transportation between the states (Islands in FSM), which is always constraint of the logistics process and personnel movement due to very limited flight schedule and few vacant seat. Therefore special consideration on transportation and time frame allocation is expected.

8. Regarding local transportation, FSM stakeholders share the vehicles and drivers. However, FSM requests APT to pay the gas charge of usage due to constraint of timeframe of diet, unexpected high rate of gas and amount of unknown usage gas itself.

9. Upon discussion of above issues, for all thing being equal, finally we had conducted inauguration ceremony on this project as follows:

1) November, 27th 2009, Sate of Chuuk, FSM
2) Participants

2)-1 From Government FSM
   *His Excellency of Minister of DTC&I, Mr. Ichimai
   *Secretary DTC&I, Mr. Golden Jonnyboy
   *Manager of DTC&I, Mr. Mark DeOrio

2)-2 FSM Telecom
   *President, Mr. Akinaga
   *Branch office manager of FSM, in Chuuk, Mr. Mori
2) 3 School staff from each state in FSM
   *Mr. XXX-KKKK, Sino Memorial school, Chuuk
   *Mr. XXX-XXXX, COM, Pohmpei
   *Mr. XXX-XXXX, Walung, Elementary school, Korae

2) 4 From APT

2) 5 Ministry of General and Interior affairs of Japan

2) 6 JICA (Japan International Cooperation Agency)
   *Mr. Hamada, Director of JICA FSM Liaison office

2) 7 Japanese Embassy
   His Excellency, Ambassador Mr. Satou

2) 8 From Japanese team, KDDI
   *Pr. Saga, NICT, Tokyo
   *Dr. Urano, dean of GITS, Waseda University
   *Mr. Koga, Project director, KDDI, Tokyo
   *Mr. Uchiyama, Project manager, KDDI, Tokyo
   *MS. Kojima, Project coordinator, KDDI, Tokyo

3) Special comments from APT
   On behalf of all APT, Mr. Kajiwara honorary had stated special comments
   onto this project.
   Mainly his appreciation was that;
   Despite of that they had been faced on much of obstacle,
   all concerned member on the project had made striving for complete of this
   project to the end.

4) Programme
   The ceremony’s program was as follows:

5) Special Comment of Mr. Ichimai, Minister of DTCI, FSM

6) Special photos as bellows:
7) Exchange letter of thanking to each other.
Finally between two countries they have exchanged their memorandum for
This project to keep the network maintain well perpetually.

6. Workshop and Training
We conduct Internet workshop and training for each state of the islands for adequate
days with wish to provide trainees (teachers, mainly at this time), basic computer
skills and also the usage of our web based health information form. Our workshop and
also the training were conducted at each site when related guests to join the workshop.
All details about this course training were attached in APPENDIX of this report.
Those pages were so huge, so that we should have separated with this document.
Please refer to A.7 Report on the Training component of the APT Project in
APPENDIX.

![Ready to SKYPE](image1)
Ready to SKYPE

![Newly installed new PCs in the class](image2)
Newly installed new PCs in the class

7. Initial result from using personal computer in FSM
After the system was completely set up and was used for a few weeks, we can see the
initial result as follow:

- Before the involvement in the project, most of school teachers do not have even a
  chance to try computer. Now they can get the basic usage of computer and even get a
  chance to try the updated technology so-called LAN system over islands
- Utilizing such LAN system, it is very effective tool for those school teachers to
  exchange information and communicate among each states more effectively
  with free of charge. For example, with the use of skype, they can make a free call to
  each other which can reduce the phone call expense. They even can exchange related
  documents, patient report, and medicine report to each other by email instead of
delivering in person which is very time consuming.
With the provision of internet connection, they can check and download more documents related to their work at school. They can deal with homework more effectively than before via information exchange and online consultation among each of linked postal service or telephone line. Especially, they can get the back up support from DOE Headquarter in Pohnpeí directly through this network.

using online consultation and diagnosis.

• It brings awareness to health workers and local people in Angk snoul for the benefit of ICT to health care service. It also raises more awareness and attention from Ministry of Post and Telecommunications and Ministry of health for the benefit of the system.

8. Future development and Sustainability
8.1 Sustainability

8.1.1 Trouble shooting
It is indispensible to consider the trouble shooting procedure as a rural area method. Although some of staff member at the steering committee would have experienced to maintain the ICT equipments, however we need to take into account such as the feature of spare parts supply in the rural area as well as operational hours. We attach the recommendation items which we have to consider for the trouble shooting in APPENDEX, “A3 General Maintenance guide”. Even if the good network has been implemented perfectly however, it will go up in smoke without better maintenance work daily basis.

8.1.2 Operation and maintenance
We have trained all the concerned teachers to use our system. They were very active in learning with this new technology. With our manual and instruction guideline, they can learn it step by step and will be able to use the system effectively. In addition, we also gave the instruction to them about how to properly take care all the items that they are using including laptops, webcam, headsets, solar panels, wireless antenna and so on. Another thing, since all equipments are located near each other so it is easy for
them to help each other for the usage of applications. Related to maintenance issue of local Internet lines, FSM telecom will be responsible to take care all the items and take any actions to sustain the Internet carrier system. Since each Tele-center in each state is using identical products so it is easy to test or backup whenever there is a problem among the parties. There is a set of spare items which can be replaced to the broken ones. The base station in Phonpei, DTCI will preserve some spare parts both for network and Tele-center as KDDI placed some of them after network inauguration.

8.1.3. Deployment
When our Tele-center system gets successful, more and more people will start to realize the great benefit of ICT e-education. In the future, we maybe able to extend the network infrastructure and link to our existing ones. The result of maintenance action to be taken by local staff will allow to give themselves good solutions for future expansion liked to the other state or province in the another rural areas of FSM islands. Of course, needless to say, it can be extended to more local government offices and remote schools in FSM.

8.2. Recommendation for sustainability
Effective strategies and cooperation with local government are very important for sustainability of the system operation. The responsibility of related agency to maintain the system is also the crucial point. Moreover, searching for the collaboration from other local or international organizations which have the similar interest and objectives can be a tool to expand our long term project. One of the most important things that we should consider is the human resource training. If there is no one has ability to use or to maintain our system, it cannot last long. We should provide enough training to local school teachers in both basic ICT skill and how to operate our applications properly.

9. CONCLUSION
This 2008 and 2009 APT project in FSM, The government of Federal State of Micronesia had been carried out with great effort and cooperation between Japan and FSM. It met its original purposes, and has helped the people in rural area or its province in realizing the benefit of ICT for their lives. One important aspect of the project was that it can prove the benefits of utilizing ICT in rural area, namely the people can utilize many useful application and information; therefore it can be replicated into other areas with the installation of this project serving as the model.

For true sustainability, we think that the most important point is that the local people should comprehend more of the value of utilizing ICT in everyday life. It is also important that they develop suitable applications for themselves and by themselves,
because only they understand what is most needed and useful for their lives on this universe.

In conclusion, this APT project has provided the local people among three of state in FSM, a chance to experience the use of ICT in the rural area. It also permits them to exchange knowledge in the application of ICT with people in Japan. Through this exchange, they have acquired information on various issues from Japan, and both sides have expanded their human network, which could be crucial in building globally competitive human resources in the future.

10. Acknowledgement
We'd like to express our gratitude (from both Japanese and Vietnamese partners) to APT, who has kindly supported this project.

we herewith would like to attach the transferring list of equipment in this project in the report document. The list has been prepared by PDF files from next page. Original are exchanged between both parties.
APT (Asia Pacific Telecommunity)  
&  
FSM (Federal State Micronesia)  
Transferring List  
For Madolenihmw Elementary School (Pohnpei)

Pilot Installation of Tele-Center for remote education and Healthcare in Rural Area and Isolated Islands, in Micronesia.

ATT·FSM·Japan Team, herein, transfer the items to the Pohnpei state as the attached list.

24th July, 2009  
FSM & APT(KDDI)
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Transfer list for Madolenihmw ES

Date: July 24, 2009

Transfered from
(On behalf of APT FSM project team)

Yousuke UCHIYAMA, KDDI

On behalf of the steering Committee of FSM

Received by

Mr. Jolden J. Johnnyboy
(Assistant Secretary,
Department of Transportation, Communication and Infrastructure Federal State Micronesia)

On behalf of the State in Micronesia

Received by

Mr. Arewelson Arpona
(Chairman, Pohnpei State Department of Education)

On behalf of Madolenihmw Elementary School

Received by

Ms Mary Mudong
(Principal, Madolenihmw Elementary School)
APT (Asia Pacific Telecommunity)
&
FSM (Federal State Micronesia)
Transferring List
For Madolenihmw High school (Pohnpei)

Pilot Installation of Tele-Center for remote education and Healthcare in Rural Area and Isolated Islands, in Micronesia.

ATT-FSM-Japan Team, herein, transfer the items to the Pohnpei state as the attached list.

24th July, 2009
FSM & APT(KDDI)
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Date: July 29, 2009

On behalf of the steering Committee of FSM

Received by:
Mr. Jolleen J. Johnnedy
(Assistant Secretary)
(Department of Transportation, Communication and Infrastructure, Federal State of Micronesia)

Transferred from
(On behalf of API FSM project team)

Yousuke UCHIYAMA, KDDI

On behalf of the State in Micronesia

Received by:
Mr. Arwelson Arpona
(Chairman, Pohnpei State Department of Education)

On behalf of Madolenihmw High School

Received by:
Mr. Albert Augustine
(Principal, Madolenihmw High School)
APT (Asia Pacific Telecommunity) & FSM (Federal State Micronesia) Transferring List For Madolenihmw Municipal office (Pohnpei)

Pilot Installation of Tele-Center for remote education and Healthcare in Rural Area and Isolated Islands, in Micronesia.

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**Date:** July 29, 2009

**On behalf of the steering Committee of FSM**

Received by:

Mr. Jorden J. Johnnyboy  
(Chief Secretary,  
Department of Transportation, Communication and Infrastructure, Federal State Micronesia)

**Transferred from**  
(On behalf of APT FSM project team)

Yousuke UCHIYAMA, KODI

**On behalf of the State in Micronesia**

Received by:

Mr. Arnelson Arpona  
(Chairman, Pohnpei State Department of Education)

**On behalf of Madolenihmw HM**

Received by:

Mr. Patrick Ringsien  
(Mayor, Madolenihmw HM)
APPENDIX

We herewith present in this report with the following specific written as it is described in many details so far. Each topics are as of important to understand what was this project carried out as well as how the project had been proceeding to the end. The brief summary of each report is also listed out below:

A1. APT Micronesia Project Report
   is described general information on designing the network as well as implementation work.

A2. Network configuration
   Concrete network design was determined with those drawings.

A3. Fedora 10.2 Server User Guide
   This shows server configuration in details to be installed at each Tele-center in FSM.

A4. General Maintenance Guide
   General recommendation for daily maintenance work on the network.

A5. Linux basic knowledge and Server maintenance
   General recommendation for daily maintenance work of the servers.

A6. Micronesia Tele-center Project
   This describes about Windows cancellation/report Procedure

A7. Report on the Training component of the APT Project
   Training course or (seminar) conducted for this project in details were reported in these papers.
APPENDIX A1

APT Micronesia Project Report

This describes general information on designing the network and implementation work of the project.
APPENDIX A2

APT J3 Project in Micronesia (FSM)
Network Configuration

1. Physical Network (WiFi and T1)
2. IP network layer
3. PC/Server and location
IP address network “tunneling”
IP Network in Chuuk

- **IP Network**
  - **Sino Memorial ES**
    - WiFi At Pole
    - **CISCO1310**
      - HUB
    - Printer:
      - 192.168.133.51
      - 255.255.255.000

- **FSMTC Xavier Station**
  - **WiFi At Tower**
  - **CISCO1310**
    - IP
    - T1
  - **CISCO1800**
    - **Gateway IP**: 206.49.137.198
    - **NAT IP**: 206.49.137.201
    - DHCP & NAT
      - Private Scope:
        - 192.168.133.0/24
      - DHCP:
        - 192.168.133.1~50: FSMTC reserve
        - 192.156.133.51~64: APT reserve
        - 192.168.133.65~255: DHCP auto

- **FSMTC Chuuk Branch (Weno)**
  - **Satellite**
  - **DHCP & NAT**
    - **SV**: file/proxy
      - 206.49.137.197
    - **Net Mask**: 255.255.255.252
IP network Kosrae

Walung ES

WiFi At Pole

CISCO1310

HUB

Printer:
192.168.177.51
255.255.255.000

FSMTC
Okat Station

WiFi At Tower

CISCO1310

IP

T1

CISCO1800

Gateway IP: 63.84.111.198

Printer:
192.168.177.51

Private Scope:
192.168.177.0/24

DHCP:

192.168.177.1~50: FSMTC reserve
192.156.177.51-64: APT reserve
192.168.177.65-255: DHCP auto

SV: file/proxy 63.84.111.197

Net Mask: 255.255.255.252

FSMTC Kosrae Branch

Satellite

T1

NAT IP: 63.84.111.201

DHCP &

Printer:
192.168.177.51

255.255.255.000

Gateway IP: 63.84.111.198

Printer:
192.168.177.51

255.255.255.000

Printer:
192.168.177.51

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Printer:
192.168.177.51
APPENDIX  A3

Fedora 10.2 Server User Guide

This document shows server configuration in details which is to be installed at each Tele-center in FSM.
General Maintenance Guide

General recommendation for daily maintenance work on the network.
APPENDIX A5

Linux basic knowledge and Server maintenance

General recommendation for daily maintenance work of the servers.
APPENDIX A6

Micronesia Tele-Center Project

This describes about Windows cancellation/report procedure.
APPENDEX A7

Report on the Training component of the APT Project

Training course or ( seminar ) conducted for this project in details were reported in these papers.