Innovative R&D by NTT

Creating new industries by sharing ICT Solutions data in collaboration with developing countries

Hideyuki Iwata
Jun. 15, 2017
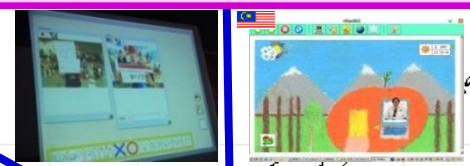## Nippon Telegraph and Telephone Corporation

NTT

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Outline

1. Introduce of current case studies (Pilot project of ICT solutions)

2. Promotion of case studies

3. Sustainability

4. Challenge (Platform sharing information)

5. Summary

Case Study Sites- APT J2 & J3

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Malaysia/Kuching (e-Education)

Philippines/Thailand (e-Agriculture)

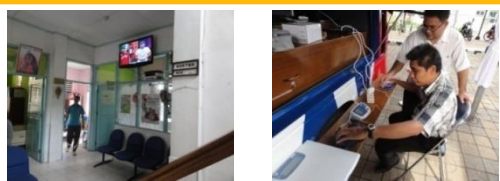**Philippines (e-Aqua culture)**

Indonesia/West Sumatra (e-Office)

Malaysia/ Bario (e-Education)

Indonesia/West Sumatra (e-Healthcare)

Indonesia/ Palangkaraya (e-Environment)

Vietnam/Ho Chi Minh City (e-Aquaculture)

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APT 2015-J2 Pilot Project in Vietnam
"Shrimp Pool Water Quality Monitoring"

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■**OUTLINE (2015/3~2016/2)**
・**Aquaculture industry (Shrimp farming) is very popular in Vietnam. The project aim to reduce shrimp kill that is caused by oxygen deficiency in the Shrimp pond. The project constructed a sensor network that measures and supervise the dissolved oxygen level, temperature, PH and transparency of the water.**

34% is not successful

Motivation
⇒Yield enhancement by sensor network systems

Aquaculture in Vietnam

- In 2013
  - 1037 million ha
  - 3.21 million tons
  - ~ US$2.5 billion
- Target in 2020
  - Export US$11 billion
  - 2.8% – 3% GDP

Income of aquatic products

1.78   18%   2.5

2012   2013

Horiba DO

TEMP

Sensorex   PH

APT J2 Research Project in Kalimantan
Exploration of ICT's Potential in Peat land Environmental Conservation"

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■OUTLINE （2011/5～2012/3）
The number of fires in the peat land is closely related with the water level in the dry season. So, we propose to establish the ICT remote monitoring system to monitor the water level, CO2, visual image, precipitation, temperature, humidity, pH, near an existing simplified dam in the canal.

Field Server Network

Data Center

Measurement of water level, CO2

Peat land

Water Level, CO2, etc. near the dam

Dam to control water level of canal in peat land

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APT-J3 Pilot Project in Malaysia
"e-Education & e-Healthcare solution for remote rural communities"

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■**OUTLINE　(J2 : 2010/J3 : 2011)**
e-Education service will be provided to primary and secondary schools through new optical intra-network. Also hospitals and clinic will be connected to optical intra-network to provide the same healthcare service which is developed by the project in indonesia.

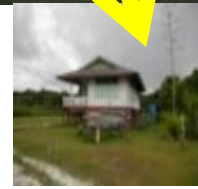**Optical LAN System (1)**

e-Bario

New Hospital (uc)

e-Educational solution

Secondary School

Primary School
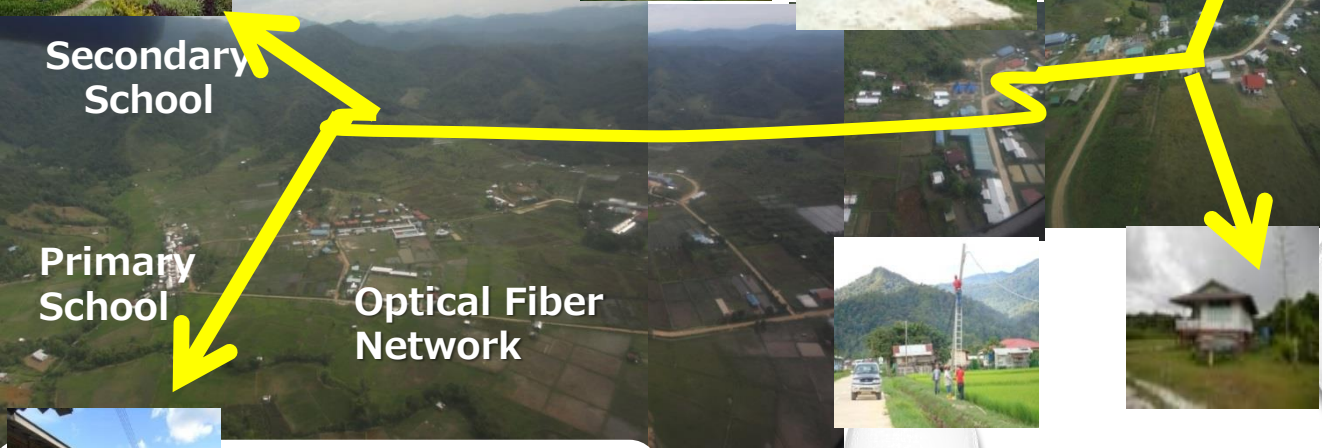
Optical Fiber Network

Optical LAN System (2)

e-Healthcare solution

Current Hospital

Pilot Project in Indonesia/West Sumatra
"e-office/Optical fiber intra network"

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7 Government Offices
Total optical Fiber length 1.3km

Regional House of Representatives

Livestock and Fishes Agency

Environment Agency

ICT Management Agency

Main Office

Health and Social Agency

Community Empowerment and Family Planning Agency

Development Planning Agency

Public Works Agency

Education and Labor Force Agency

Health and Social Agency

Agriculture Agency

Human Resource Center

Inspectorate office

Another 7 Government Offices
Total optical Fiber length 2.3km

Optical-LAN

(1) KANTOR BUPATI
(4) DISHUB KOMINFO
(2) Access Point/Dinas Kesehatan
(3) BAPEDA
(7) Pertanian (6) BKD
(5) Dinas Pendidikan

ke Istana Pagaruyung
Lapangan Tenis
Lapangan Upacara
Puskesmas Pagaruyung
ke SMA 2
Pendidikan
tamansufi@jazz.or.id

K.8
K.7
K.4
K.2
K.3

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APT-J3 Pilot Project in Philippines 2009
"Broadband farm to Market Ecosystem for fisher folk communities"

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■ **OUTLINE （ 2010/4~2011/3)**

Aquaculture industry flourish in this area. The project aim to reduce fish kill that is caused by oxygen deficiency in the lake.

The project constructed a sensor network that measures and supervise the dissolved oxygen level, temperature and transparency of the water.

Furthermore it also build a knowledge database that contributes to market growth and training the young fisher folk.
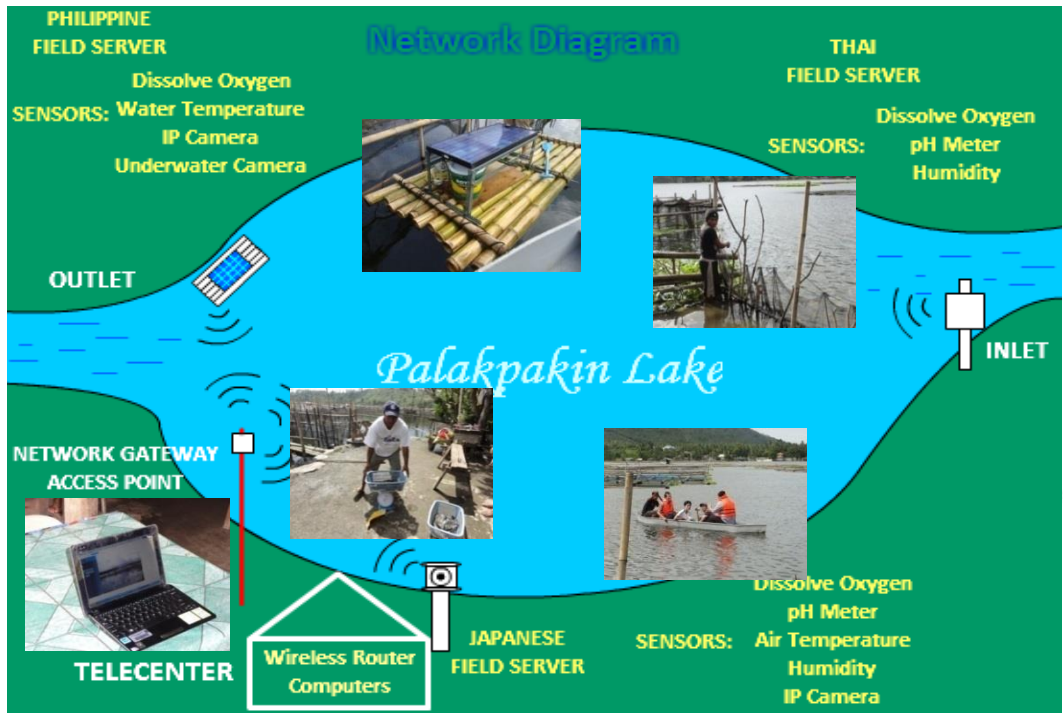
Network Diagram

PHILIPPINE FIELD SERVER
SENSORS: Dissolve Oxygen, Water Temperature, IP Camera, Underwater Camera

THAI FIELD SERVER
SENSORS: Dissolve Oxygen, pH Meter, Humidity

OUTLET

INLET

Palakpakin Lake

NETWORK GATEWAY ACCESS POINT

TELECENTER

Wireless Router Computers

JAPANESE FIELD SERVER

SENSORS: Dissolve Oxygen, pH Meter, Air Temperature, Humidity, IP Camera

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APT-J3 Pilot Project in Philippines 2009
"Broadband farm to Market Ecosystem for fisher folk communities"

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LAKE MANAGEMENT SYSTEM
- **Ground truth under satellite cloud cover**
- **Maps with metadata**

- **Monitor lake utilization (less than 10% lake area for fish pens)**
- **Water hyacinth cleanup**

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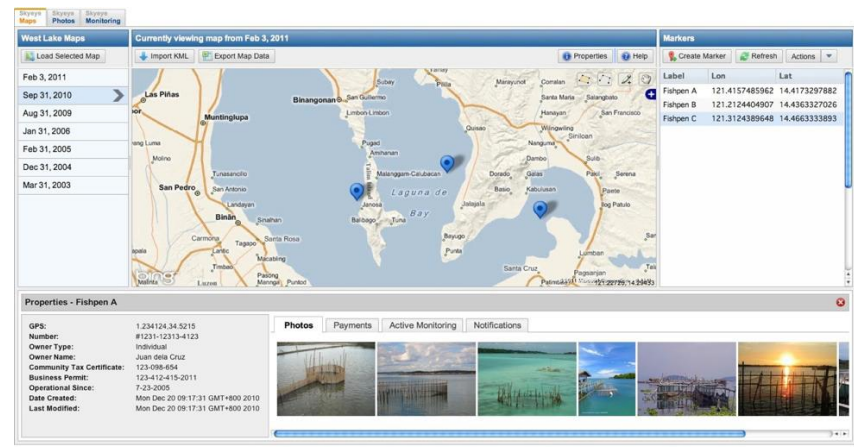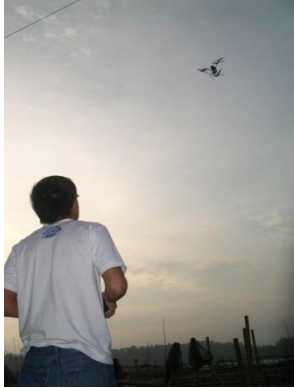
Handbook for ICT Projects for Rural Areas (Promotion of case study)

Intended Goals

- **To guide future initiatives to introduce ICT Projects for rural communities**

- **To provide insights into the development and implementation of ICT projects for rural communities**

- **To disseminated research findings and experiences collected through previous projects, widen ways of thinking about ICT projects for rural communities**

http://www.apt.int/sites/default/files/Upload-files/ICT/Projects/New%20folder/HANDBOOK%20for%20ICT%20Projects%20for%20RURAL%20AREAS.pdf

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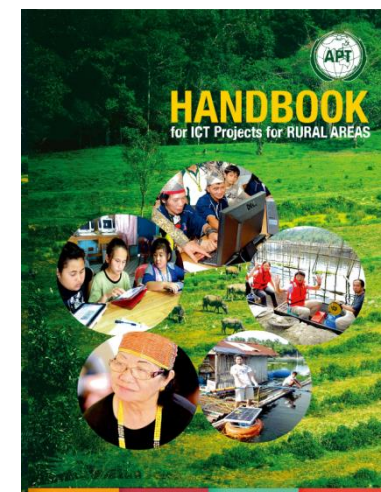
Sustainability 1 (New business)

http://www.skyeyeproject.com/
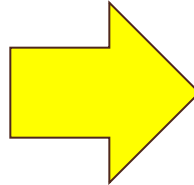
Skyeye Inc. was incorporated on March 2013. It is one of the first technology start-up led by students in Ateneo and is housed in the Ateneo Innovation Center (AIC).

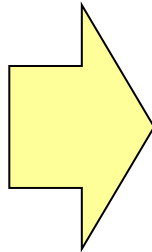# Sustainability 2 (Key Solution)

Main service currently in operation

(Regional Financial Management information System)

ICT Room in the main office building

Before
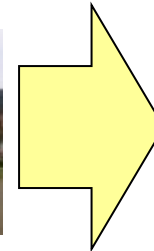
After

Enable data entry to the System from each of the connected offices

Expanded 7 offices by local government

Sustainability 3 (Key technologies)

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■**Background:**
I had current project using monitoring environmental data to resolve social issue. But monitoring IoT systems is broken by the effect of harsh environment such as lightning, humidity, inspect and water etc.
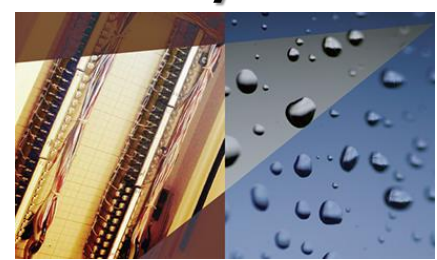■ **Objective:**
Other APT project is same problems for sustainability of solutions in harsh environment. We try to study make stable monitoring IoT system in hard environment using protection technique of lightning, water etc.

Mainboard broken, caused by **high humidity**, rusty and electric surge

Humidity Control Sheet
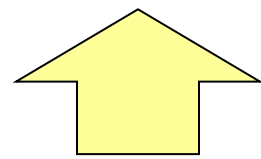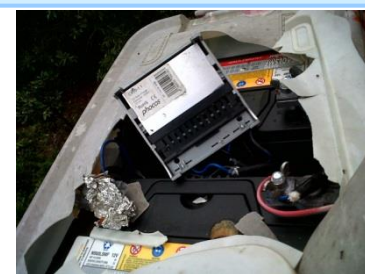
Humidity Control Sheet

Super Water-Repellent Material

Weather Rader Dome Application
HIREC   WITHOUT HIREC
Super Water-Repellent Material
150°
Drastic reduction of water film attenuation
Countermeasures against water, snow and ice accretion related-field troubles

HIREC®

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Study of Knowledge and Database Management Platform for Rural ICT

■Background:
Objectives: Carried out making new generation industrial,
First step: We study share data server and data distribution functions.

E-aquaculture DATA

E-environmental DATA

Local Cultural Information
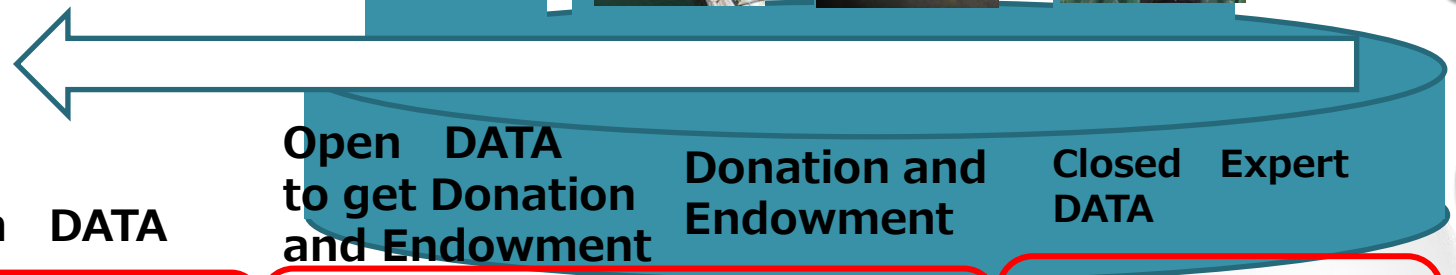
E-agriculture DATA

New solution

Open DATA to get Donation and Endowment

Donation and Endowment

Closed DATA

Expert

Open DATA

Public

Donations generated through clicks

DATA Fee

Expert

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Summary

Pilot project (Each Solution)

- ■ e-Agriculture
- ■ e-Aquaculture
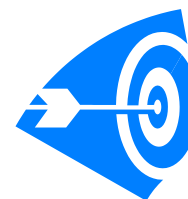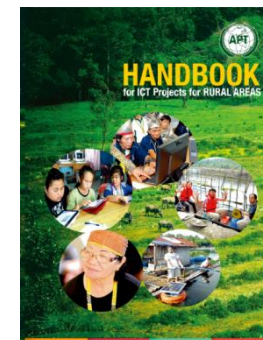- ■ e-Healthcare
- ■ e-Education
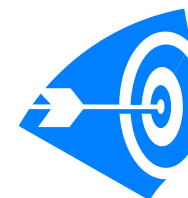- ■ e-Environment
- ■ e-Office

Promotion of case studies
- Handbook for ICT Projects for Rural Areas

Sustainability
- New business
- Key solution
- Key technologies

New Challenge
- Platform sharing information