



2023 EBC-J

Collaborative research for designing agricultural digital ecosystem for smart villages at highlands near the Himalayas in Nepal

Project Objectives

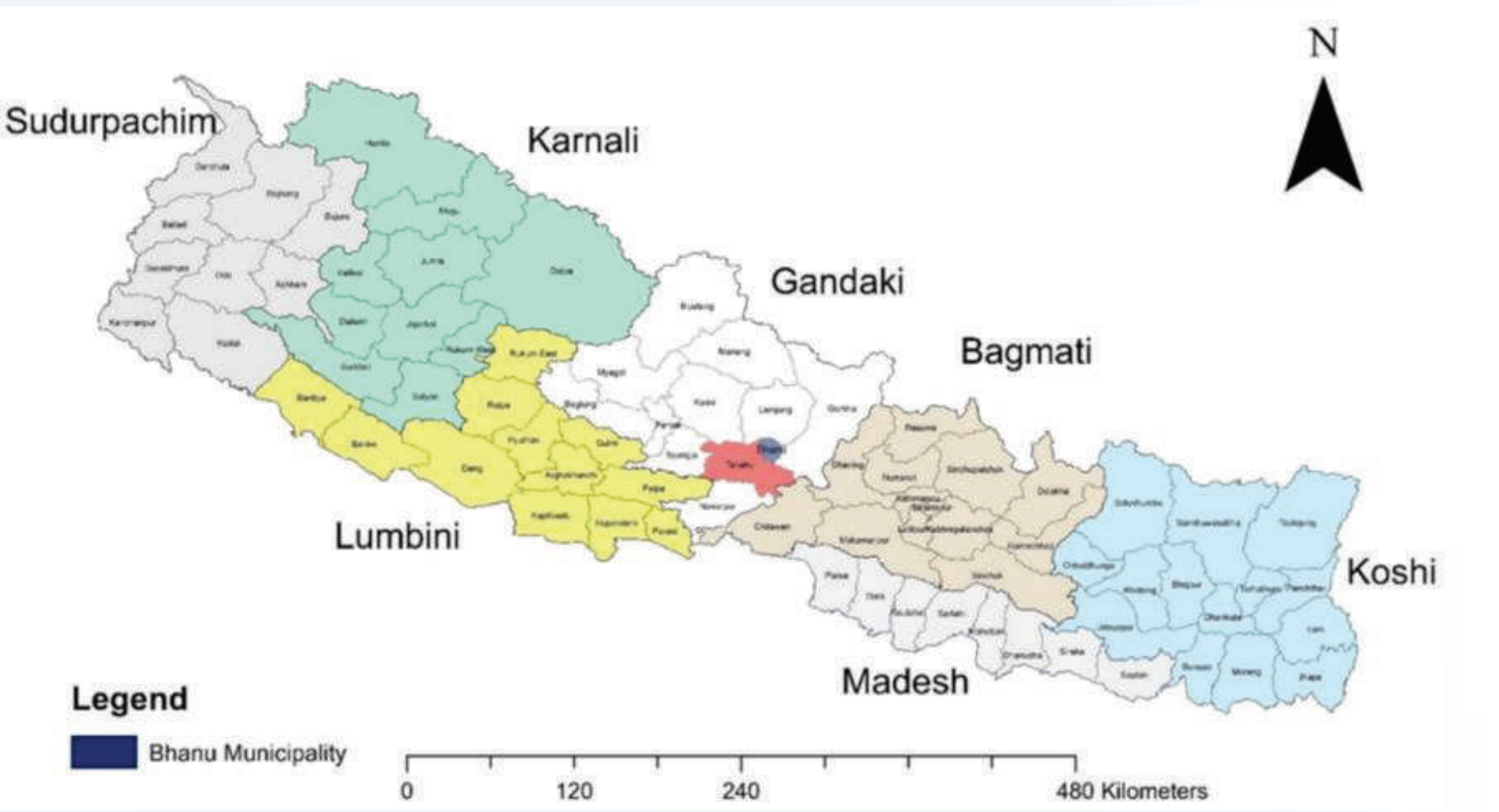
- 1. To investigate issues in the agriculture, education, and healthcare fields of Bhanu Municipality at highlands near the Himalayas in Nepal.
- 2. To design a pilot project plan for an Agriculture Digital Ecosystem for smart village of Bhanu Municipality at highlands near the Himalayas in Nepal.

Relevant stakeholders

Nepal side

MAXTECH Study and Services (Pvt.) Ltd.,
Ministry of Communications and Information Technology (MoCIT)
Bhanu Municipality, Tanahun District, Gandaki Province

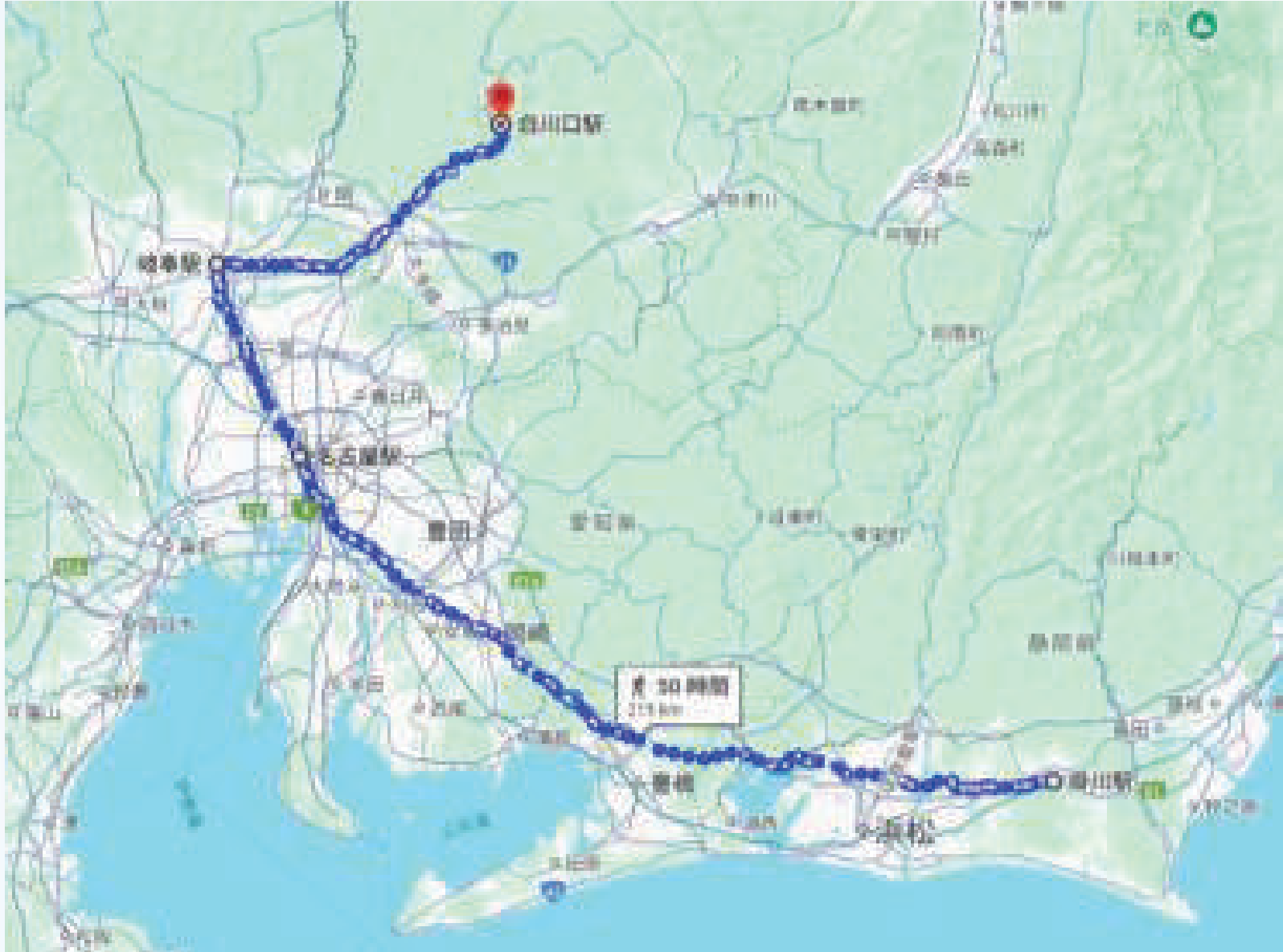
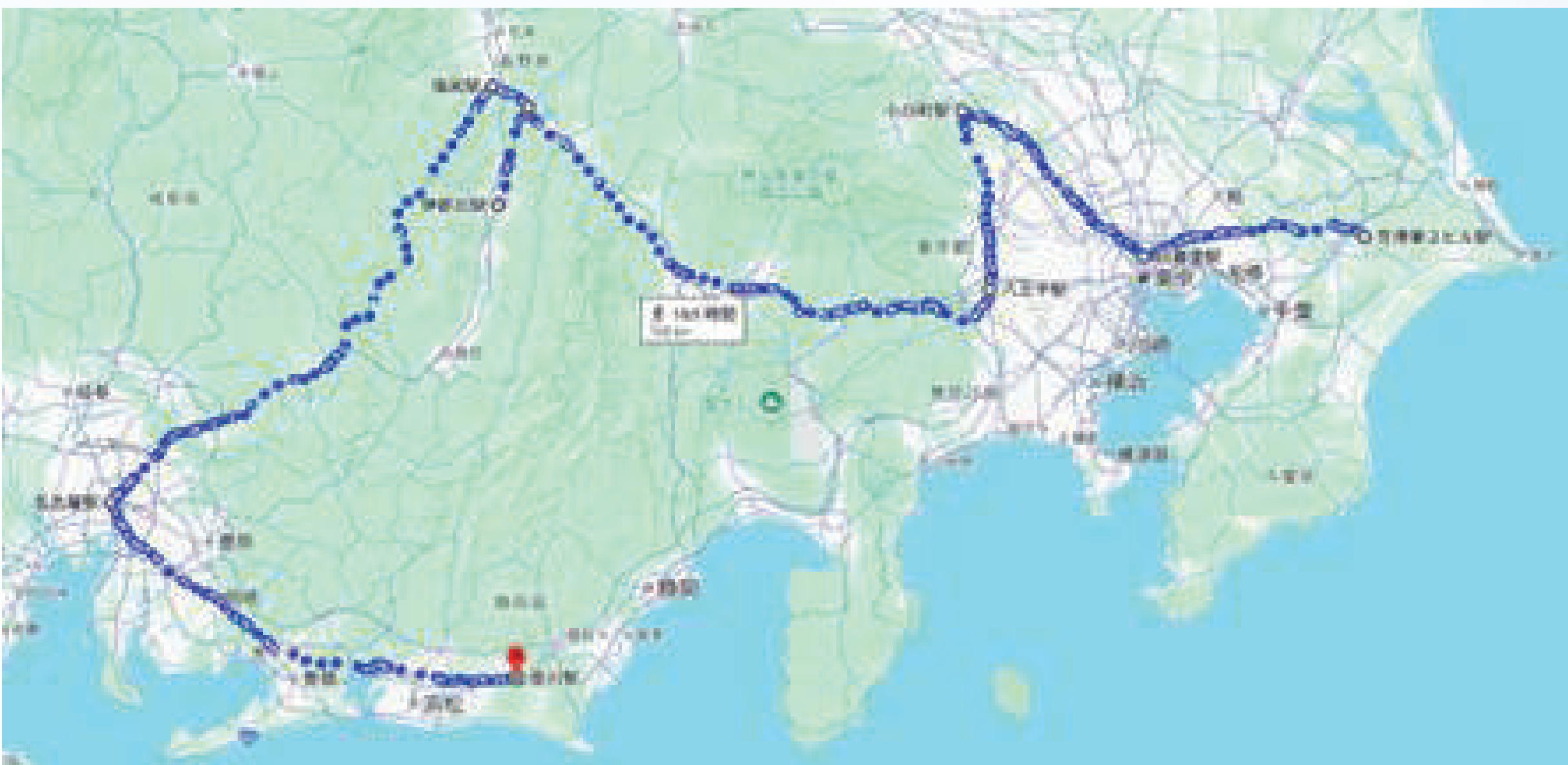
Location of Nepal



Research Site in Nepal (Bhanu Municipality and Kathmandu)

Japan side

Japan Telecommunications Engineering and Consulting Service (JTEC)
Daiwa Computer Co., Ltd.,



Research Site in Japan (Saitama, Nagano, Shizuoka, Gifu, and Aichi Prefectures)



Joint study in Nepal with Nepalese team members



September 2024.

Issues

The researchers collected the following issues in Bhanu Municipality and Nepal.

- 1. In the small local market, organic crops can only be sold at the same price as crops grown with chemical fertilizers.
- 2. Urban consumers want to buy organic produce and crops with fewer pesticides but are having trouble verifying whether the organic produce on display in stores is truly organic and crops are with fewer pesticides.
- 3. Few farmers can access compost which enriches soil sustainably, promotes long-term productivity, leading to consistent quality yields and is odor-free.

Future plans

As one of the results of this research, we designed the **agricultural digital ecosystem** as following, which **supports the consumers in the cities** making them able to purchase organic products and **supports the farmers in rural areas** by empowering them to sell organic products at a higher price than crops grown using pesticides and chemical fertilizers.

The system utilizes QR code-based traceability mechanism to certify organic production. The system has been envisioned to be integrated with Bhanu Krishi - a digital application being implemented in Bhanu Municipality. It has been proposed to include local electronic commerce with the features about order, delivery, and payment management modules in the system. This system supports DIGITAL NEPAL FRAMEWORK which was announced by MoCIT in 2019.

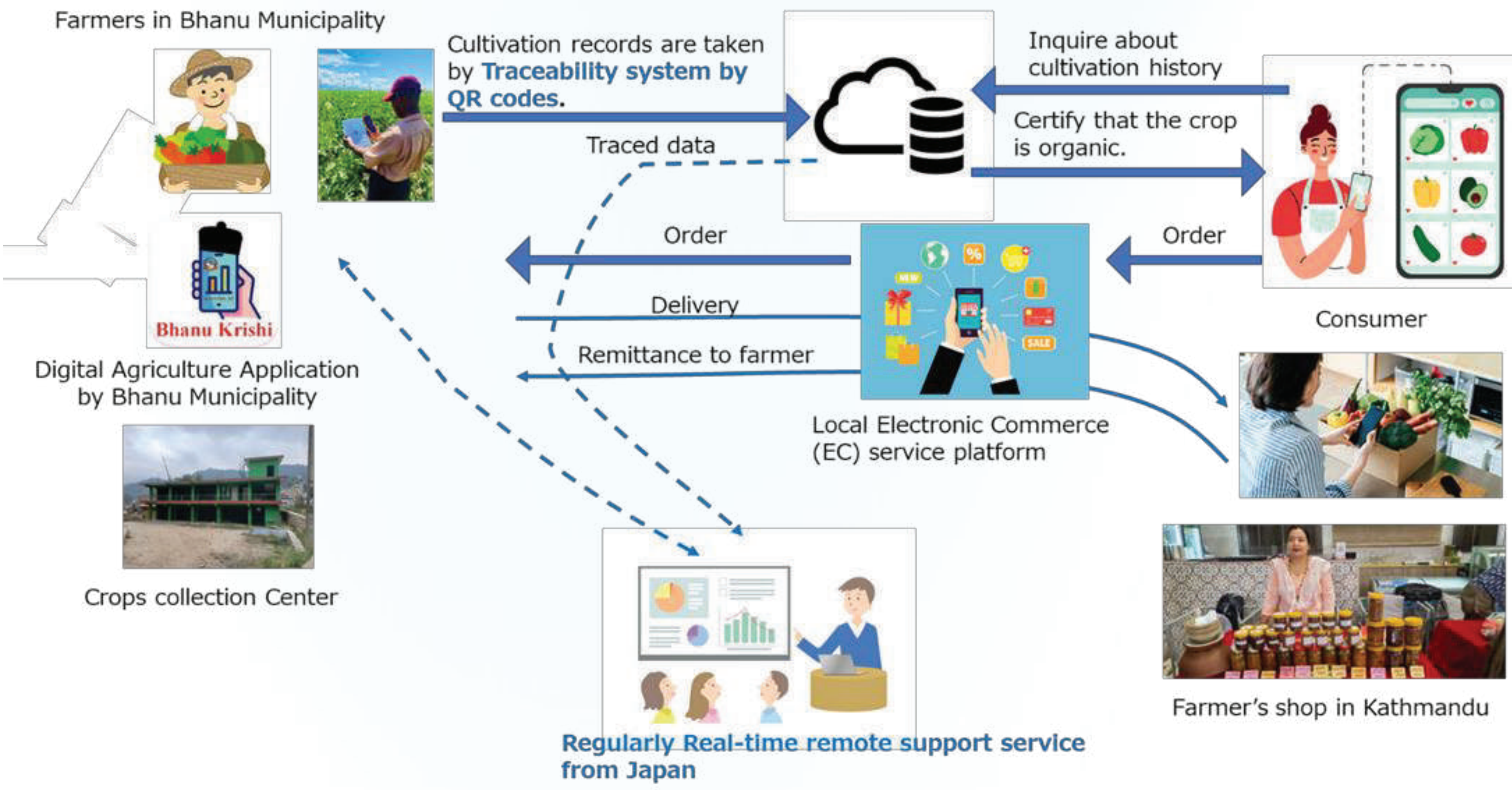


Image of whole network/system

We will find a fund to conduct a pilot project to demonstrate the usefulness of this agricultural digital ecosystem.

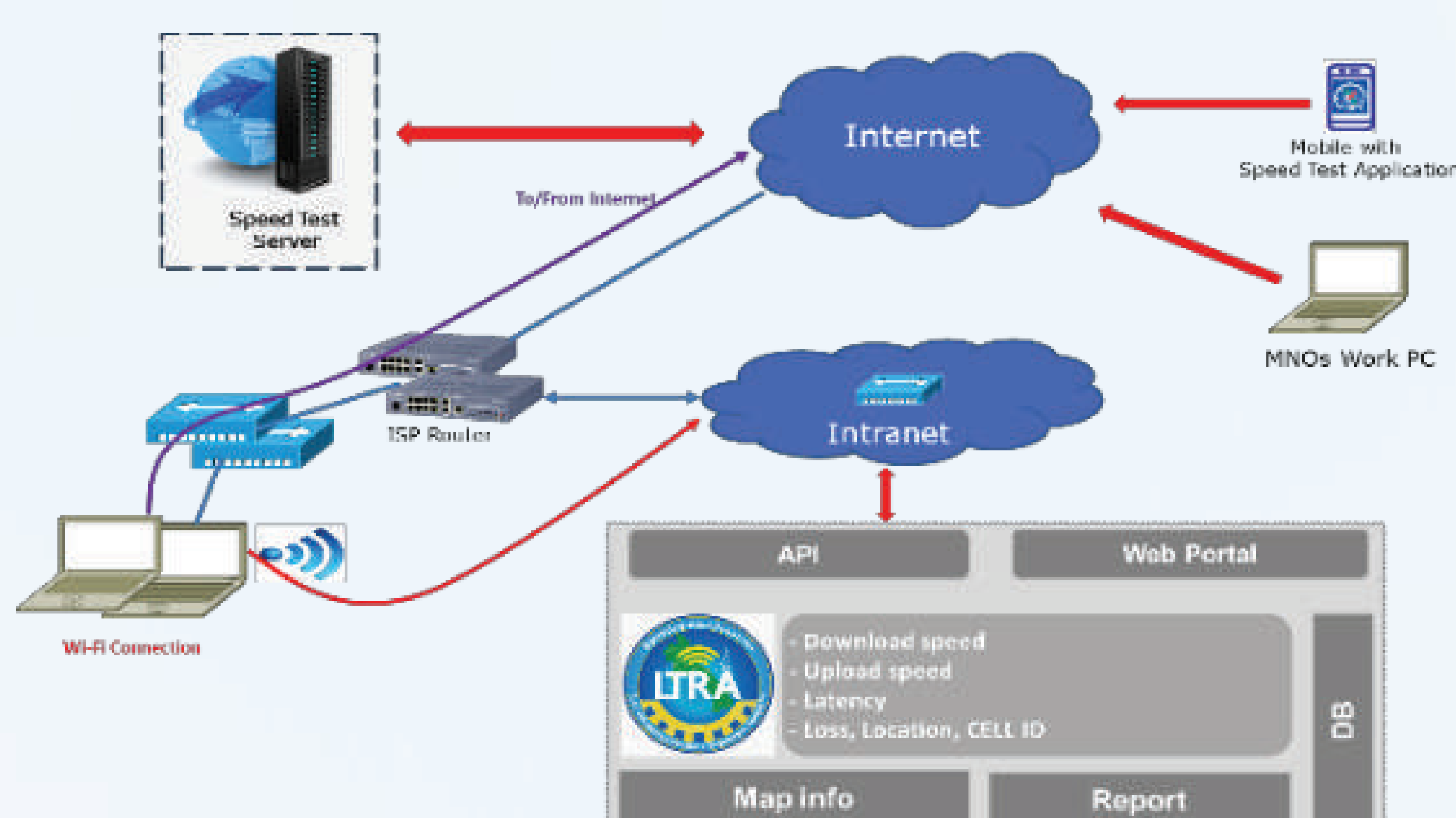


2023 EBC-J

Implementation of a Quality Inspection Center for Mobile Broadband Services in Lao PDR

Project Overview

The rapid expansion of telecommunications in the Lao PDR has created a pressing need to ensure reliable Quality of Service (QoS). Previously, the Lao Telecommunication Regulatory Authority (LTRA) lacked a systematic method for monitoring and enforcing service standards. This project addressed that gap by establishing the National Quality Inspection Center (QIC).

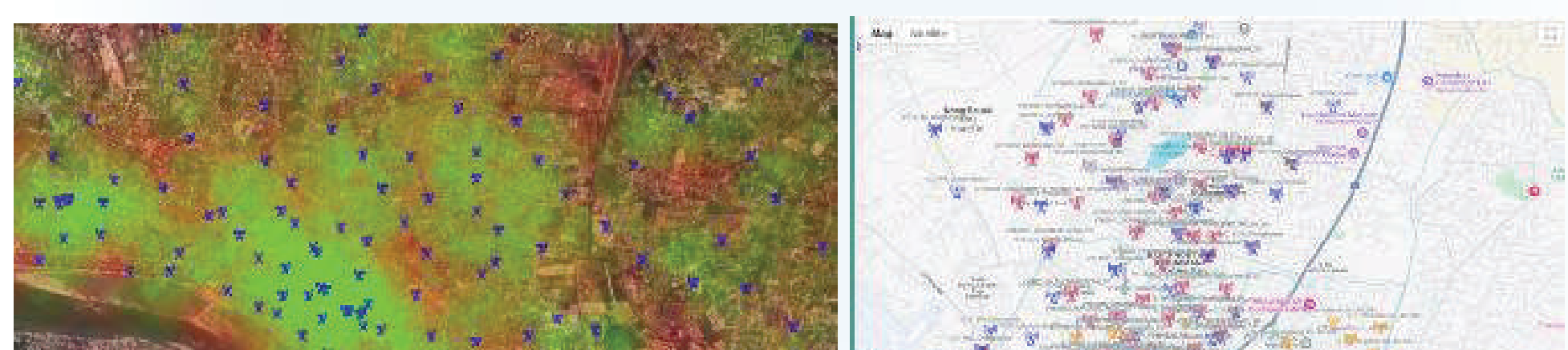


Key objectives

- Establish the QIC to monitor mobile broadband services.
- Develop and deploy the MTC Speedtest mobile application.
- Create a BTS registration and mapping system.
- Define and benchmark QoS Key Performance Indicators (KPIs).
- Strengthen consumer feedback mechanisms to reduce complaint resolution times.

Key Deliverables

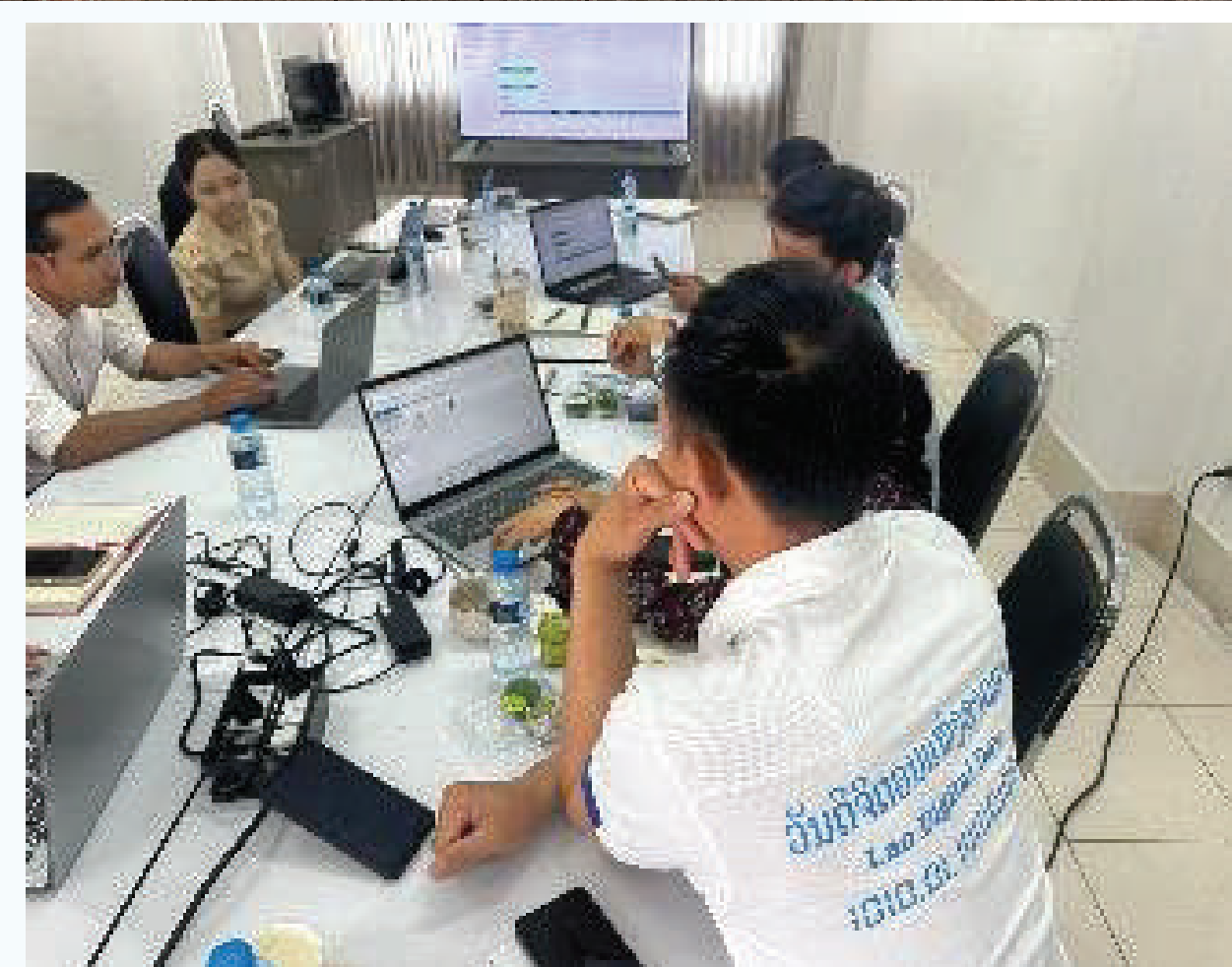
- MTC Speedtest Mobile Application: The official LTRA tool for measuring internet speed, allowing users to test download/upload speeds, latency, and signal quality, and report issues directly to the LTRA.
- Official QoS Portal: The public website, <https://mtcspeedtest.gov.la>, provides a dashboard with aggregated speed test results, operator performance statistics, and an interactive coverage map powered by the BTS database.
- National BTS Database: A comprehensive collection of physical and technical BTS data covering all telecom operators in Lao.
- Study Visit to Japan: A successful knowledge exchange with the KDDI Foundation and other institutions focused on advanced QoS monitoring and regulatory practices.



Project Timeline (C2: Apr 2024 – Mar 2025)

PeriodMilestones

- Apr–Jun 2024 Project kickoff, procurement, initial planning
- Jul–Sep 2024 Development of MTC Speedtest App and portal
- Oct 2024 Testing phase, stakeholder consultations
- Nov 2024 Study visit to Japan (KDDI Foundation)
- Dec 2024 Preliminary deployment, national awareness
- Jan–Mar 2025 Finalization, training of LTRA staff, Final Workshop (Sep 18, 2025)



V.Achievements

- National QIC Established: The center is fully operational under the LTRA.
- App Launched: The MTC Speedtest App is now uploading to play store.
- Database Created: A robust database of BTS entries from all Telecom operators in LAO has been compiled, improving network transparency.
- Improved Complaint Handling: A structured system has been established to receive, track, and resolve consumer complaints, resulting will be reduced resolution time and more transparent follow-up with telecom operators.
- Capacity Building: LTRA and Telecom's staff have been trained in QoS analysis and regulatory action.

VI. Next Steps & Sustainability

- Continuous monitoring & enforcement by LTRA QIC.
- Integration of MTC Speedtest App into regulatory reporting.
- Expansion of monitoring to include 5G networks.
- Development of updated QoS regulations based on collected evidence.



SONY GROUP CORPORATION

GISTDA

CHIANG MAI UNIVERSITY

SI LANNA NATIONAL PARK

2023 EBC-J

ICT-Enabled Forest fire management for remote rural forest areas
in Sri Lanna National Park, Chiang Mai, Thailand

Objectives

- ▶ **Implementing an early warning system that integrates Low Power Wide Area Network and communication (ELTRES), and thermal sensors** covering all of Sri Lanna National Park, empowers local communities such as rangers, residents, and travelers within the park to proactively manage and respond to forest fire threats, ensuring their long-term resilience and preparedness.
- ▶ **Fostering and building the capacity of Thai local companies** to adopt ELTRES technology and encouraging the development of tools and knowledge needed for sensor development by Thai companies for Thailand's ecosystem.

Project Timeline

MAY

MS1

Collection of Relevant Information through interviews and focus Groups

JUN

MS2

Study and Data Collection for Analysis/Installation Assessment

MS3

Installation Preparation (for Sri Lanna National Park Cover)

JUL

MS4

Phase I Installation (Rx: 2 Stations, Tx 38 Stations)

MS5

Phase I Handover and Operation

DEC

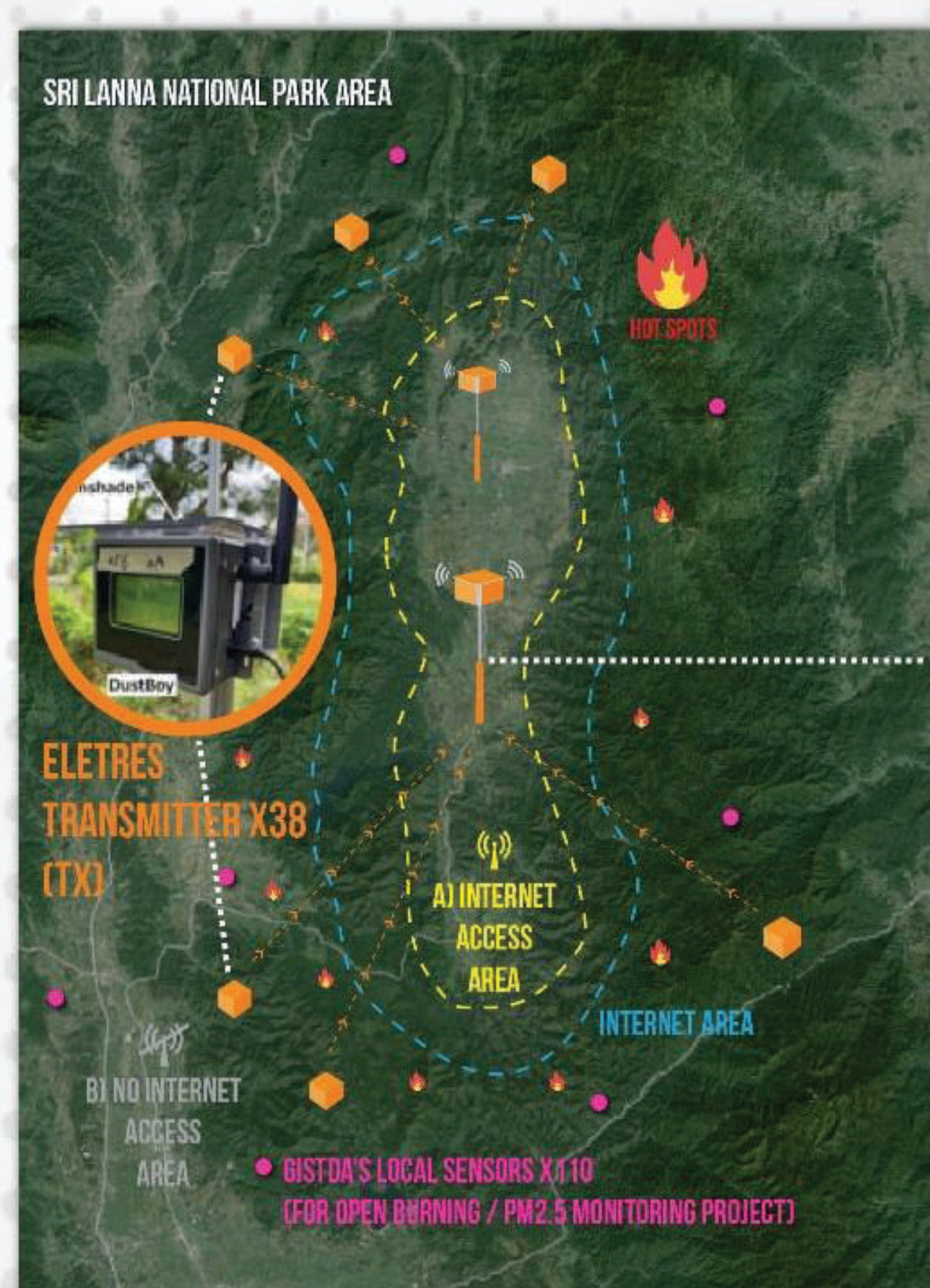
MS6

Phase II Preparation

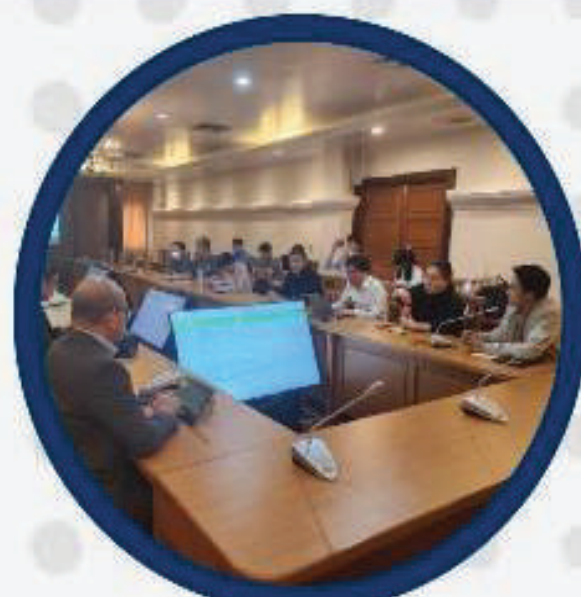
Future Plans

- ▶ **Service Deployment at Sri Lanna National Park:** Implement and launch the integrated system as a pilot service within Sri Lanna National Park.
- ▶ **LEO Satellite-Enabled IoT Receivers:** Utilize Low Earth Orbit (LEO) satellite based IoT receivers to minimize the need for extensive ground receiver stations, reducing costs and improving coverage.
- ▶ **Scalable Regional Model:** Develop a replicable and scalable framework, initially tailored for the diverse ecosystems of Northern Thailand such as community forests and agricultural fields with a vision for seamless extension to other forest types in Phase 2.

System Diagram



Sustainability of the Project



CROSS-BORDER COLLABORATION: Thermal sensors and LPWAN enable real-time data sharing, strengthening regional efforts against forest fires.



LOCAL RESILIENCE: Real-time monitoring empowers communities to respond quickly to fire threats. Capacity Building: Data systems and satellite tech support local, independent fire management.



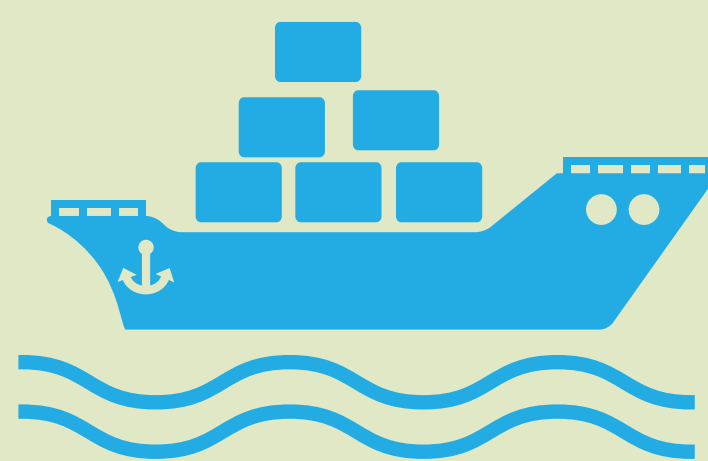
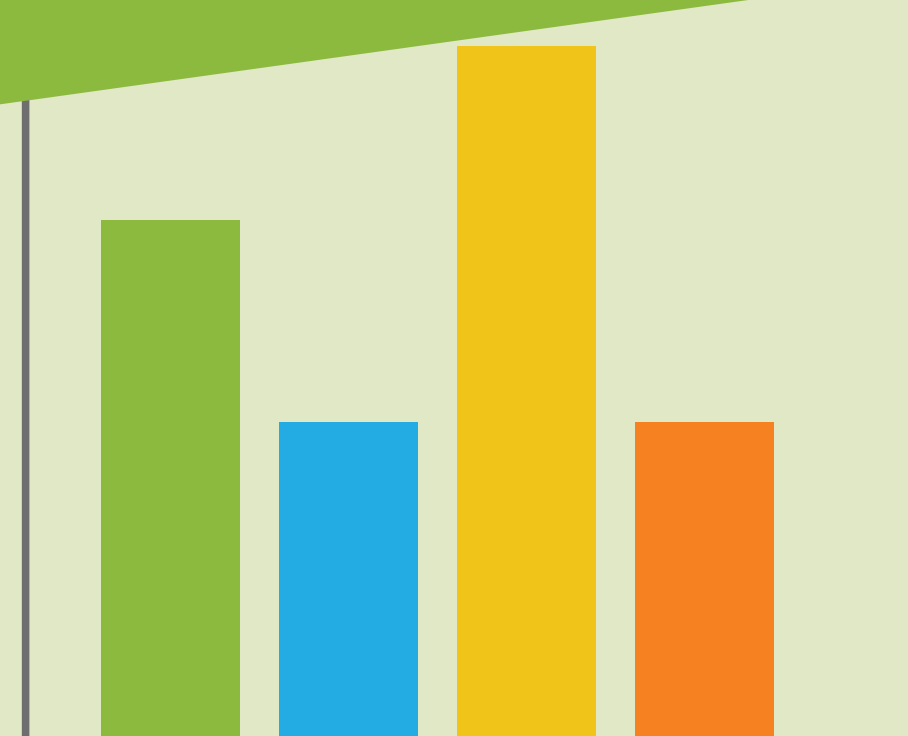
ECONOMIC & ENVIRONMENTAL IMPACT: Promotes tech investment, reduces emissions, and minimizes fire-related losses.

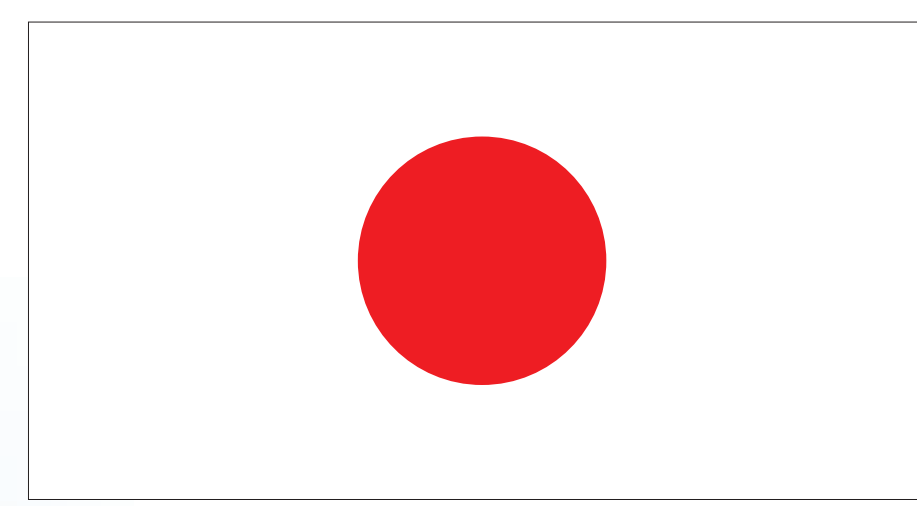
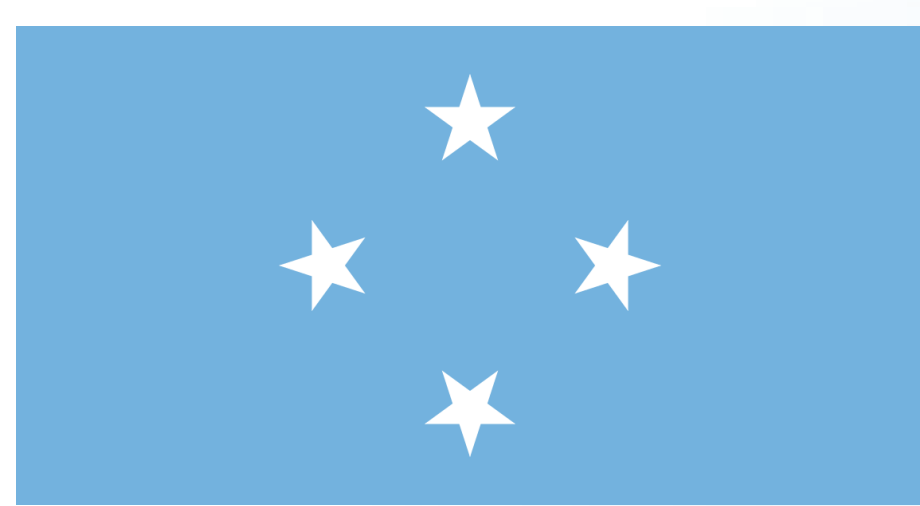


ENVIRONMENTAL CONSERVATION: Detecting hotspots helps protect air, wildlife, and ecosystems.



SOCIAL RESPONSIBILITY: Early warnings improve public health and reduce community disruption.





2023 EBC-J

Improving Medical Services using Telemedicine in the Federated States of Micronesia

Project objectives

a) Overall Goal

Through Telemedicine, contributing to stable development of the socio-economic environment by improving the medical health care services to quality, safety, secure, and prompt one for residents in the Federated States of Micronesia

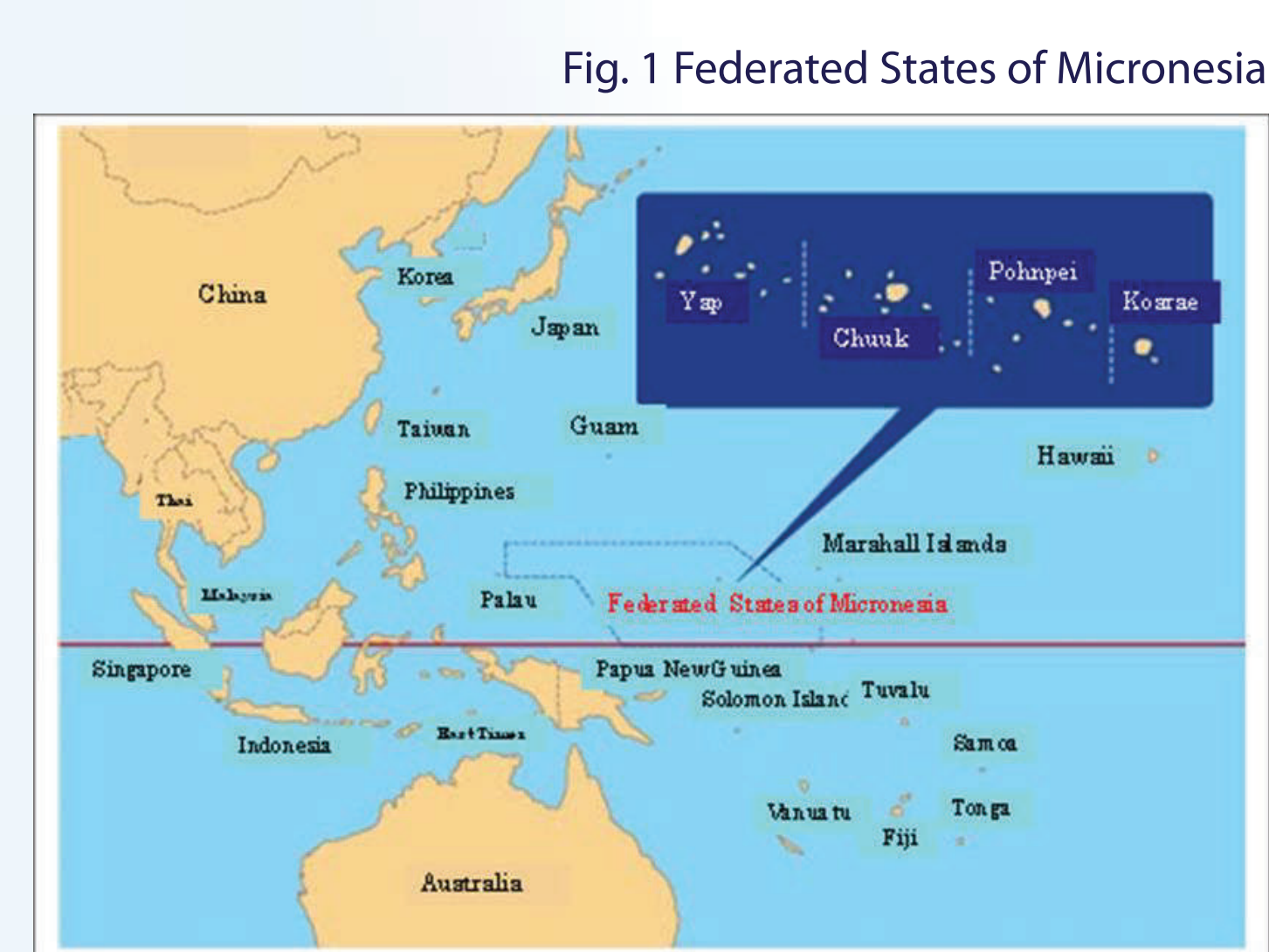


Fig. 1 Federated States of Micronesia

b) Purpose of the Project

To Enhance Maternal and Child Healthcare for the Residents of Rural Areas in the Federated States of Micronesia through Telemedicine

To Align SDGs, especially United Nations' Target 3.1 Maternal Motility Ratio and Target 3.2 Neonatal Mortality Ratio of SDGs Goal 3

Chart 1 Health Comparison

Health comparison between Japan and Major South Pacific Countries

	Japan	Samoa	FS of Micronesia	Papua New Guinea	Marshall Islands
1. Life expectancy	84.3 years	70.5 years	63.0 years	65.3 years	66.9 years
2. Maternal mortality rate (deaths per 100,000 live births)	4.9 deaths	51 deaths	129 deaths	215 deaths	155 deaths
3. Infant mortality rate (deaths per thousand live births)	<1 deaths	7 deaths	13 deaths	21 deaths	13 deaths

Project timeline, including key milestones



a) June: Study Tour in Japan (FSM Experts visited in Japan)

- To study the latest perinatal medicine and Telemedicine at Kagawa University
- To study iCTG and its operation at Melody International
- Field study tour at hospitals, clinics where tele-perinatal medicine using iCTG in operation
- To discuss arrangement/delivery of iCTGs installation in Pohnpei State

b) July: System Installation and Training in FSM (Japan Experts visited FSM)

- To install iCTGs at dispensaries and community health center in Pohnpei State
- 10 sets of iCTG have been exported to Pohnpei State Primary Healthcare beforehand
- Installation schedule, plan and training to medical professionals have discussed with Pohnpei State Department of Health and Social Services (PSDHSS)
- To visit dispensaries and community healthcare center to install iCTGs and operation training



Fig. 2 Study Tour in Japan

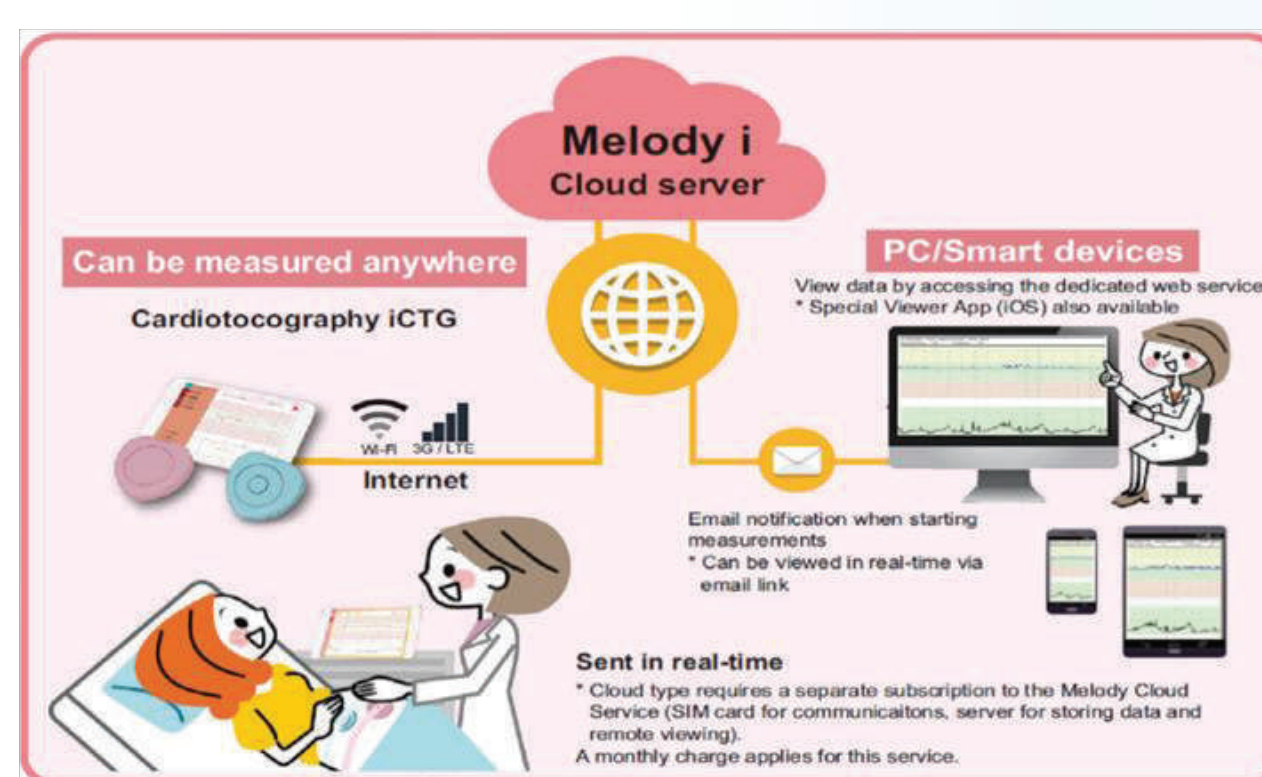


Fig.3 iCTG function

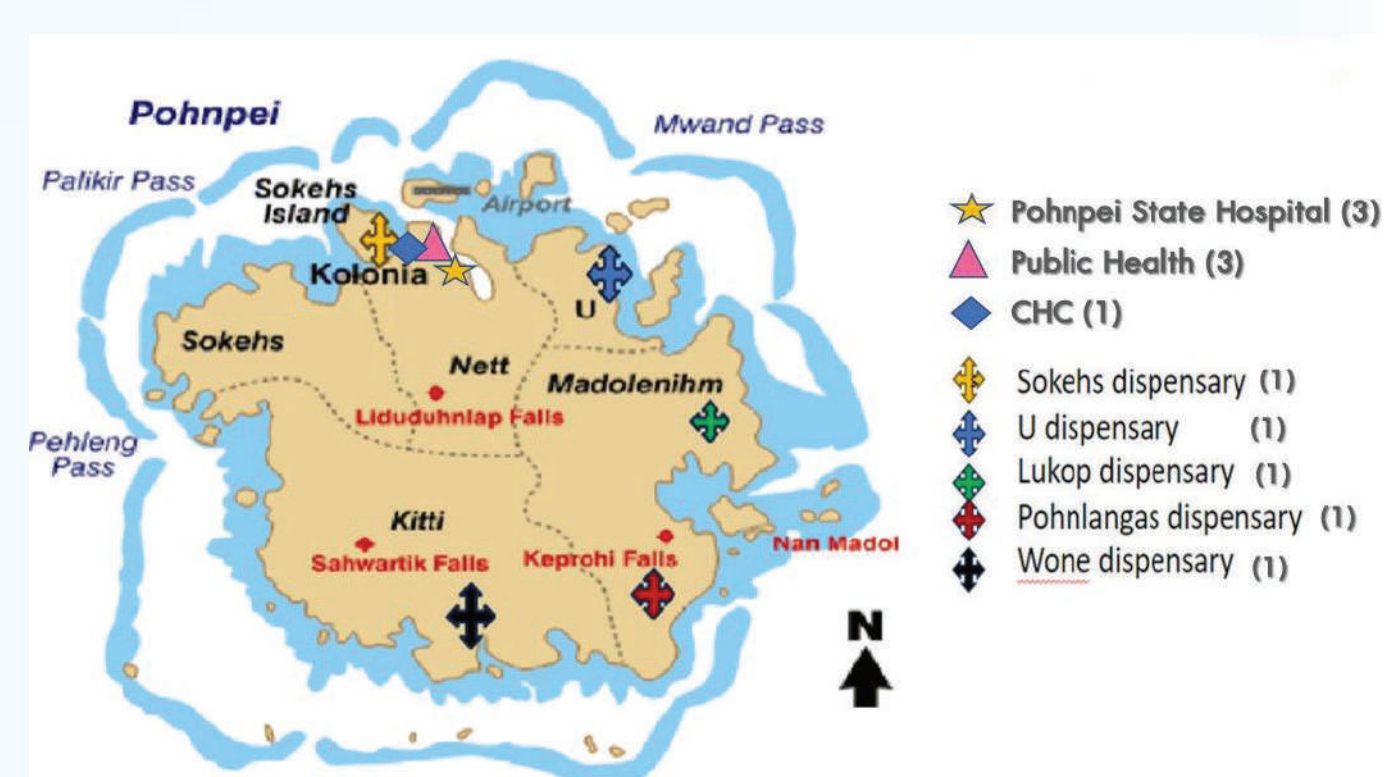


Fig. 4 Pohnpei State Project Sites

c) December: Evaluation and Closing/Handover (Japan Experts visited FSM)

- Evaluation and review of the pilot project with all stake holders
- Handing over the iCTGs to PSDHSS
- Wrap-up the project

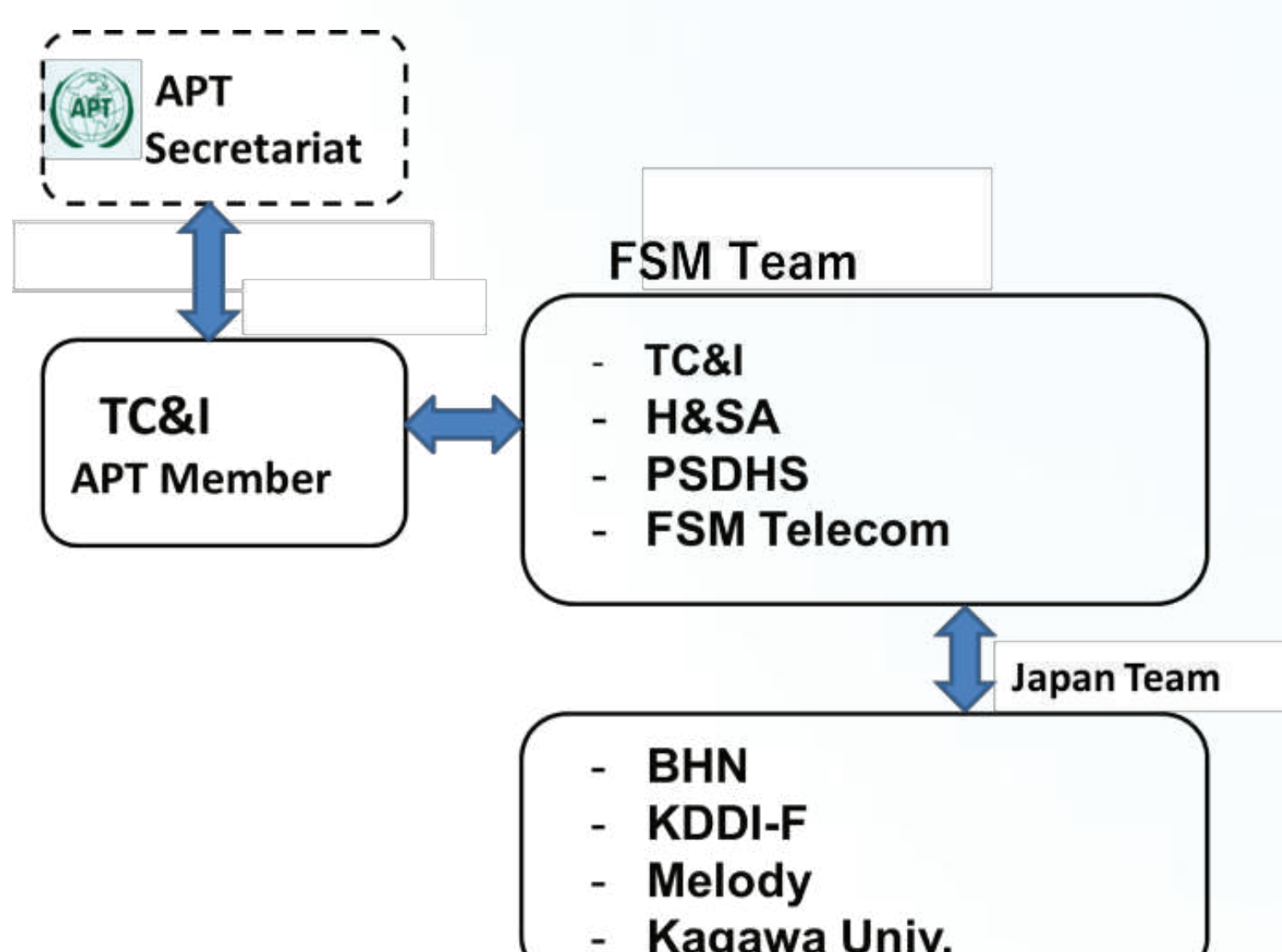
To effective usage and rotation of iCTGs, assignment of iCTG monitoring person is mandatory

Doctor's immediate feedback to pregnant woman will increase effectiveness and value of iCTG

Project Evaluation and Findings

- Quality of prenatal checkup and safer and secure delivery are drastically improved
- Telemedicine is one of the strong tools to cover shortage of medical professionals
- Quality of prenatal medicine in rural area will be extremely improved by getting OBGYN doctors' examination at State Hospital
- The pregnant women can get feedback of the examination from OBGYN doctor smoothly through network

Relevant stakeholders



Future Plan

- 1) Promote the effective use and introduction of iCTG in areas beyond the main island of Pohnpei State in FSM, including Chuuk, Kosrae, Yap and other islands.
- 2) Expand iCTG to neighboring countries, the South Pacific countries, leveraging the achievements and know-how accumulated through iCTG utilization in FSM.



INTERNATIONAL COLLABORATION RESEARCH 2024 (EBC-J)

“CENTRAL PARKING AVAILABILITY SYSTEM FOR CAMBODIA”

I. Project Overview

A system designed to provide real-time information on parking space availability across urban areas in Cambodia.

Features (including but not limited to):

- Real-time data integration with IoT-powered parking spaces
- An app to display accurate information on available parking spaces in various locations
- Provide navigation to guide drivers to the nearest available parking spot
- Provide parking data via Real-time API for the public



II. Objective

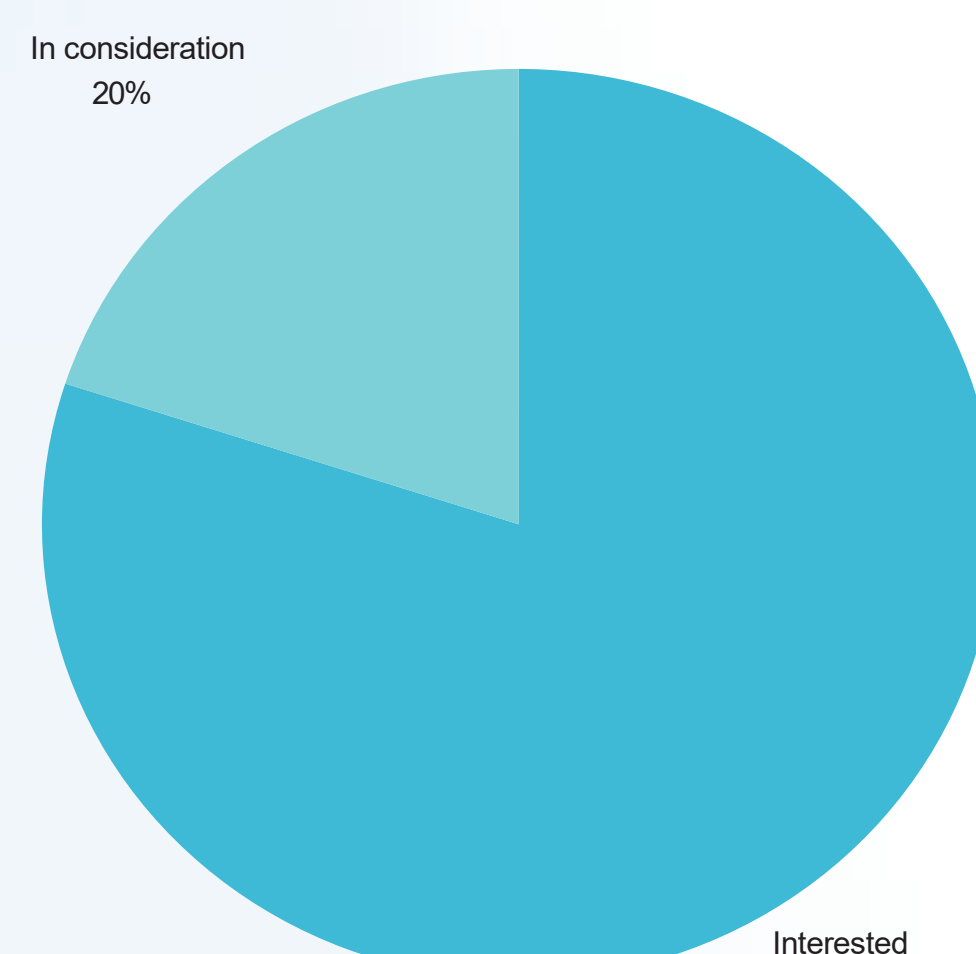
Provide an app for people to easily locate parking spots in the city

Reduce traffic congestion through real-time parking data.

Improve city parking efficiency with IoT technology

IV. Project Activities

We received positive feedback from 80% of the 11 parking operators we contacted, which included operators from malls and hospitals, about collaborating on the project. Currently, we are in the process of studying the integration of systems with two of these operators for a pilot project scheduled for September.



III. Timeline

The project was launched in April 2025 and consists of three main phases:

- Phase 1: Requirements Gathering, System Design, and Prototyping.
- Phase 2: Platform Development, Testing, and Integration.
- Phase 3: Pilot Launch and Monitoring.

Finally, the project will conclude with an official workshop and the submission of the final implementation report.



V. Technical Approach

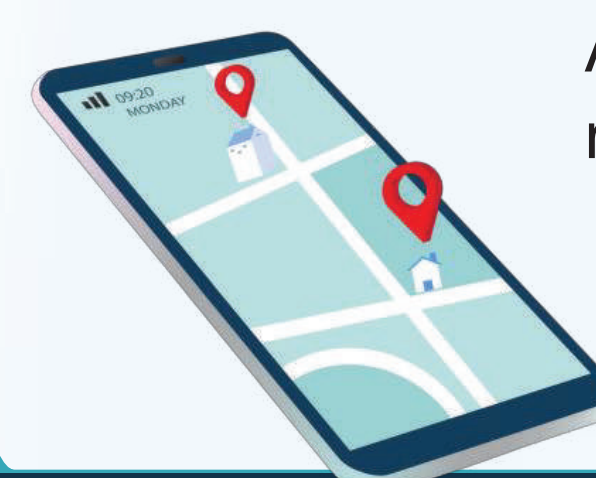
3 Key Components



Sensors and Cameras can be used to detect vehicles in parking spaces.

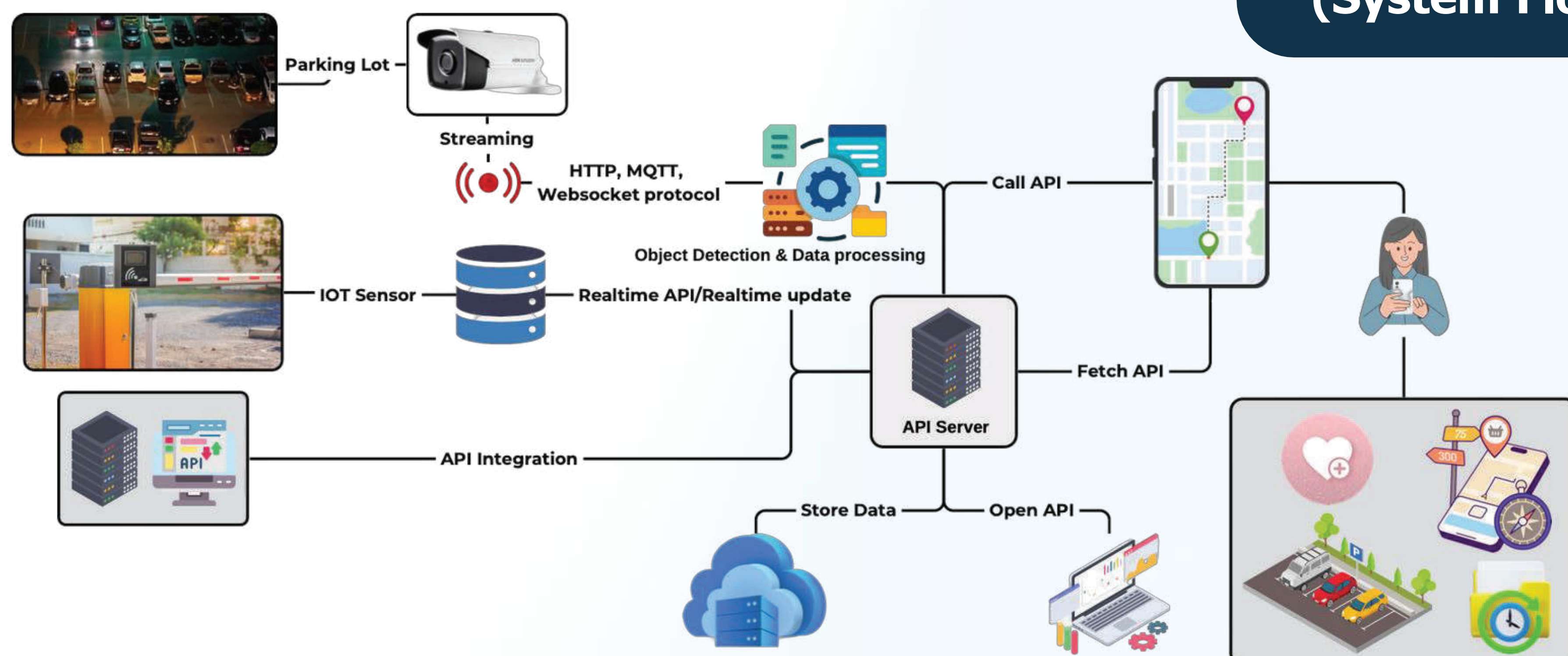


Centralized Server and Database for collecting and processing data from IoT sensors



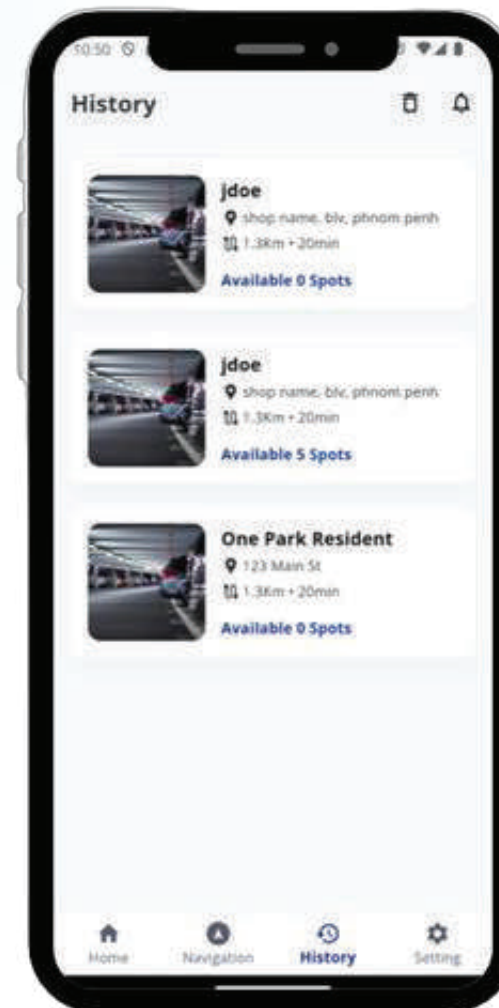
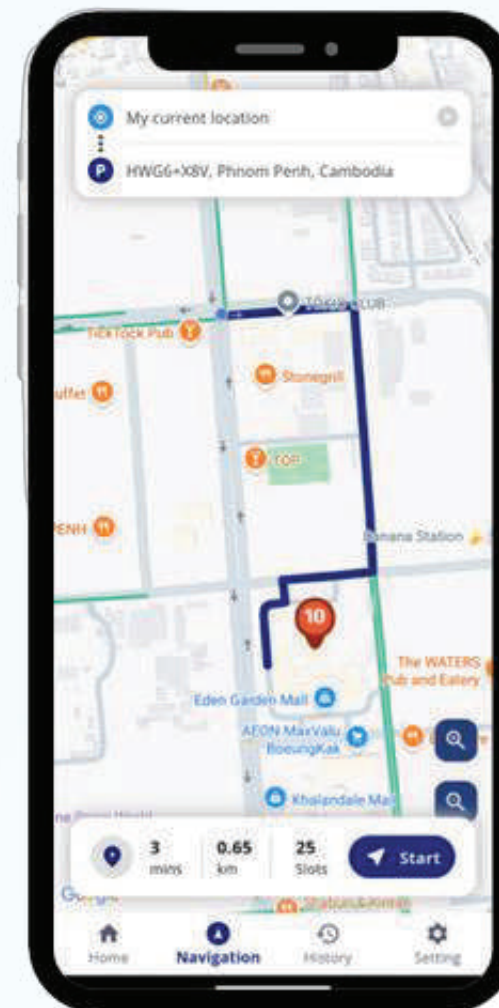
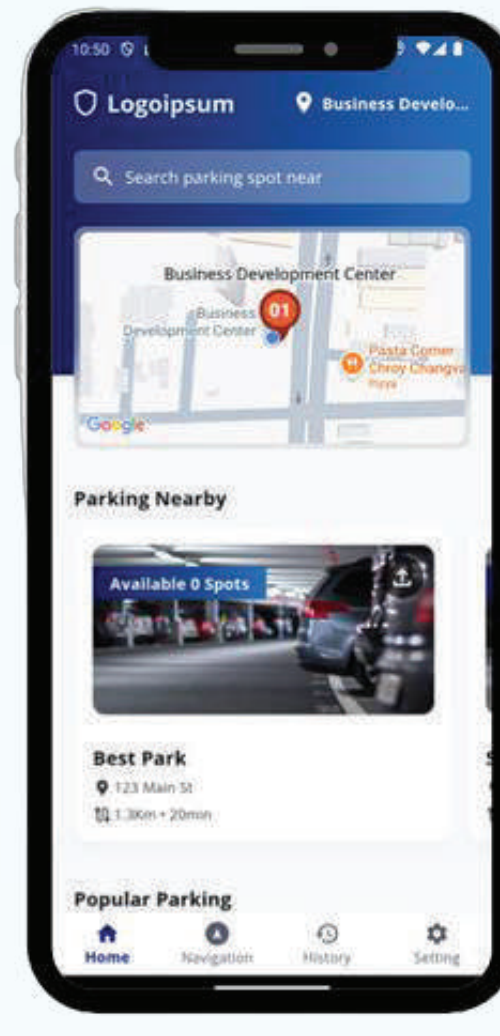
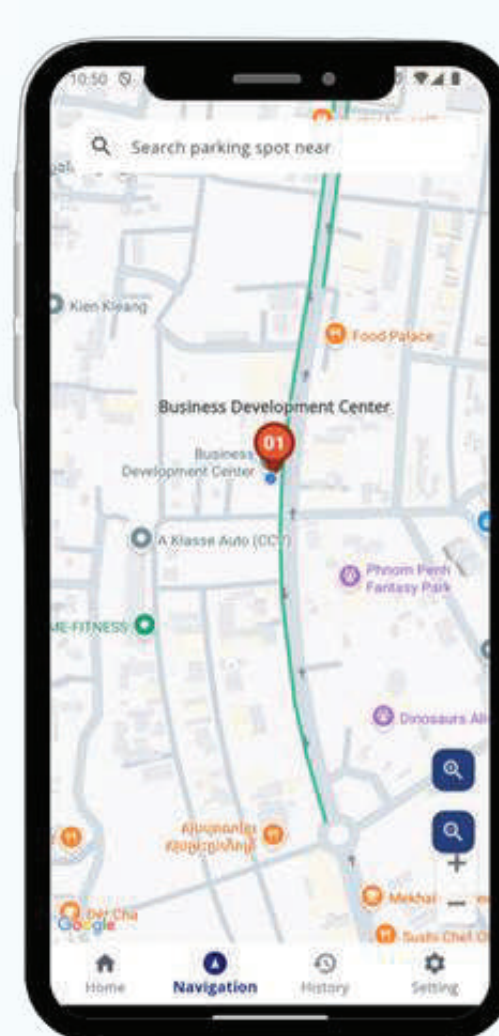
A Mobile Application for displaying real-time parking availability

(System Flow)

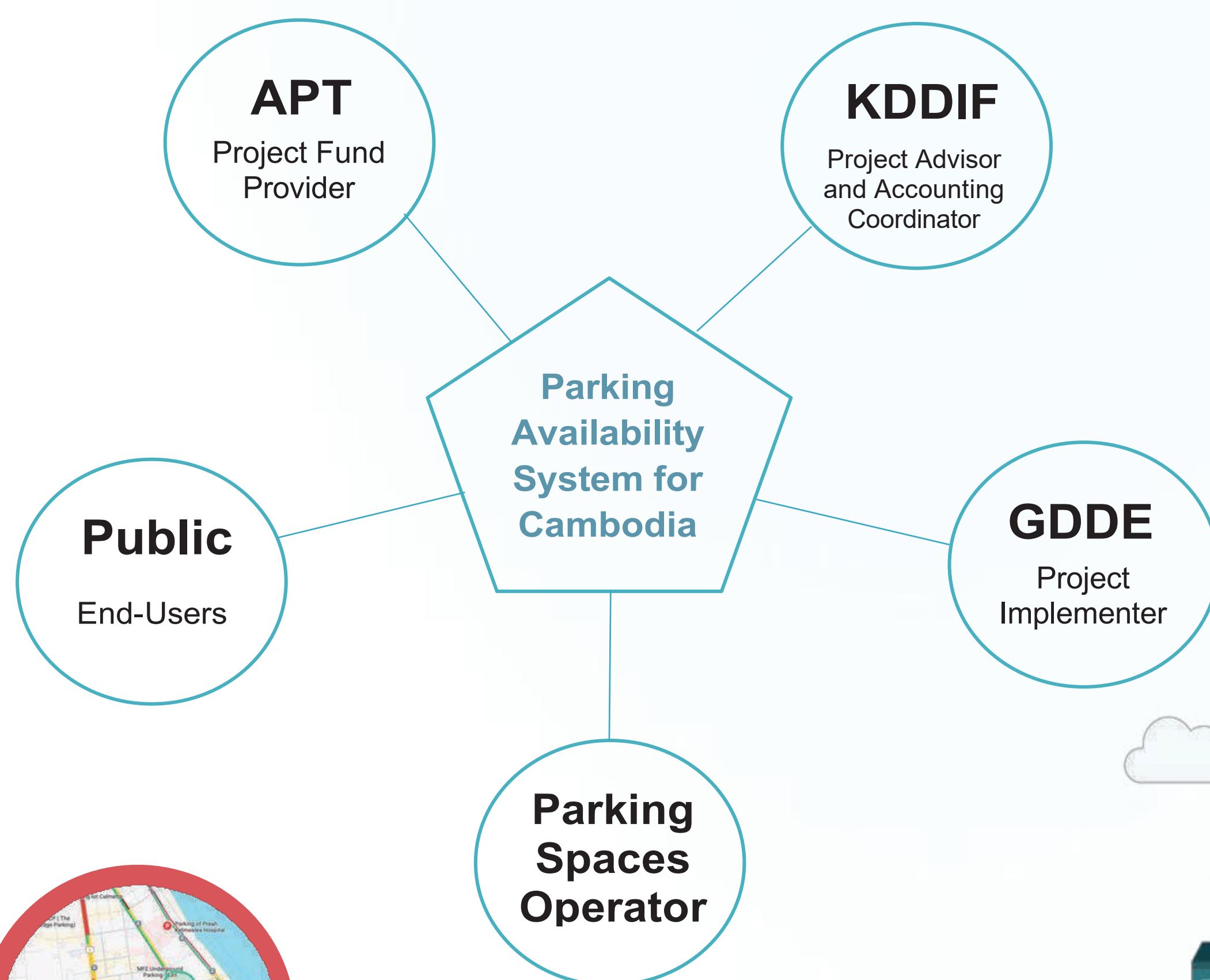


VI. Expected Outcomes

- Launch the free public app with the real-time parking map.
 - System integration with parking operators and conduct user impact validation
 - Reduce illegal parking in the pilot zones.
- Less time spent searching for parking reduces carbon emissions, improves air quality, and creates a healthier urban environment.



VII. Stakeholders



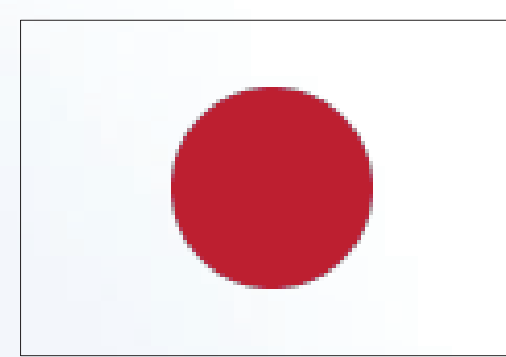
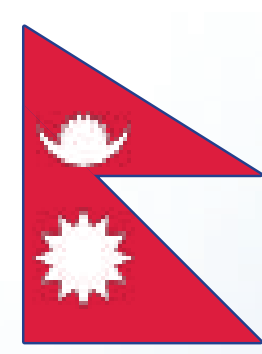
VIII. Future Plan

EV Charging Station Integration

Parking Reservation and Payment System

Integrate with Smart City Traffic Management





2024 EBC-J

Integrated LoRaWAN Edge Computing Early Warning System

Project Overview

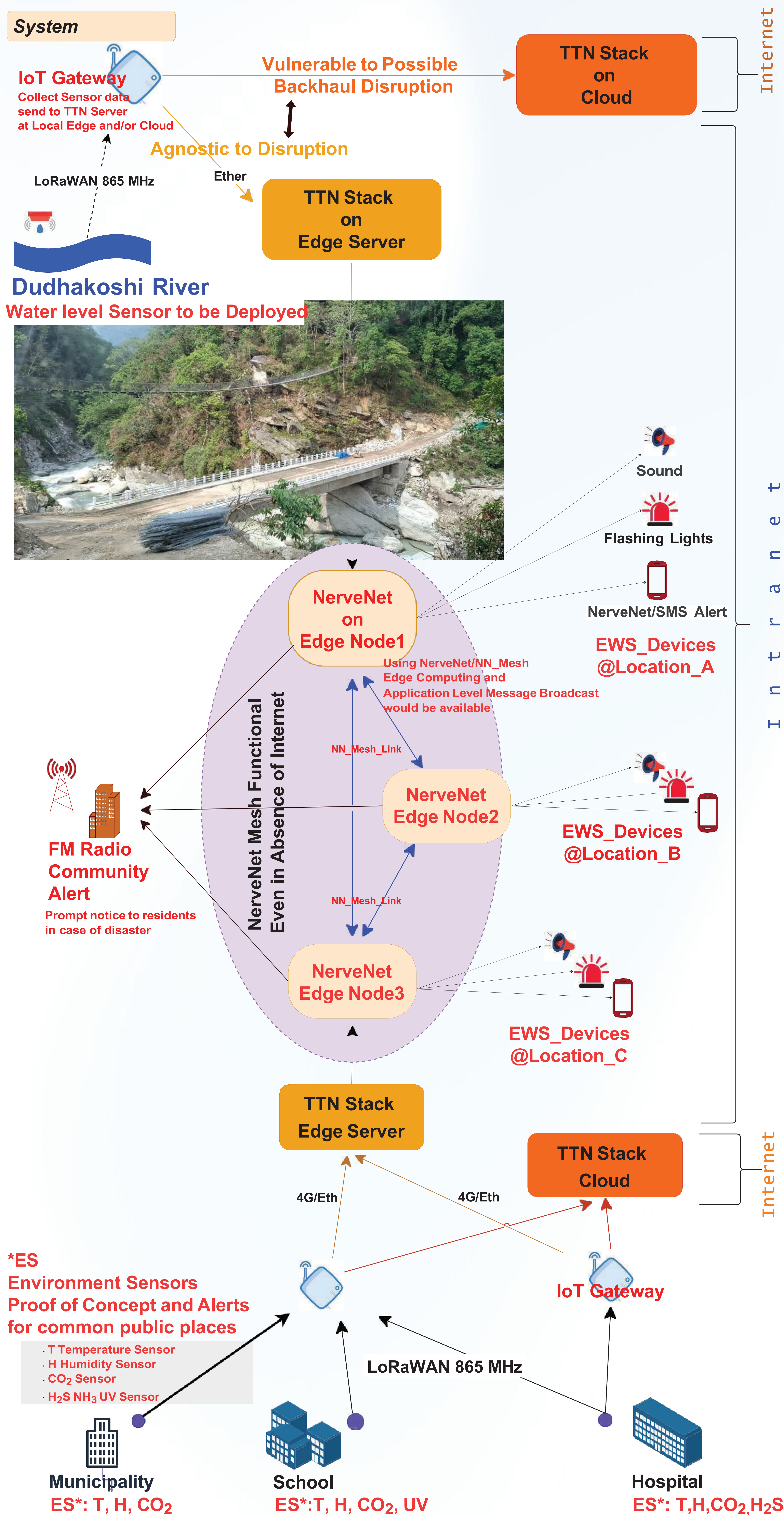
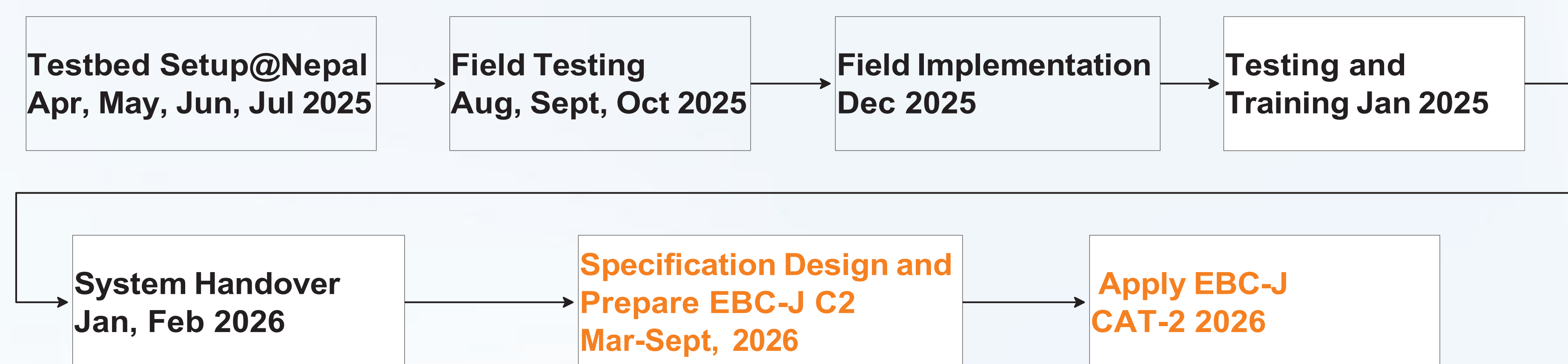
Glacial Lake Outburst Flood (GLOF) are major Disaster Events and require a robust Early Warning System (EWS) integrated with a deep and strong Community Partnership and Ownership Framework to ensure local participation and sustainability.

Concept

The EWS Architecture below is Intranet or Off Grid first. Thus, even in case of Internet Backhaul failure, the local mesh-based network will allow Alert Messages to reach the community through:

- A. Flashing Lights (especially for vehicles crossing bridge during dark hours)
- B. Siren Sounds (target: nearby residents and travelers on foot)
- C. Mobile SMS (target: entire municipality and officials)
- D. Mobile NerveNet Application (target: special custom alerts)
- E. FM Radio (target: larger community e.g. surrounding municipality, province, etc.)

Milestone





2024 EBC-J

Pilot project for multi hazard early warning system in Vanuatu

Project Objective

This project aims to enhance Vanuatu's disaster warning capabilities by developing and demonstrating a voice-based early warning system with improved network coverage. Building on the outcomes of the APT J3 Tonga demonstration, the project will customize the system for Vanuatu, strengthen the disaster management chain of command under VMGD and NDMO, and promote greater disaster prevention awareness in local communities.

Demonstration Details

(1) Feasibility Test of an Early Warning System using 60 MHz band with Voice Announcement for Multi-Hazard Response in Densely Populated Areas

Establish an Early warning system for transmitting not only siren signals but also voice messages. To verify the suitability and effectiveness of this system for operation in Vanuatu, a demonstration experiment will be conducted in Port Vila.

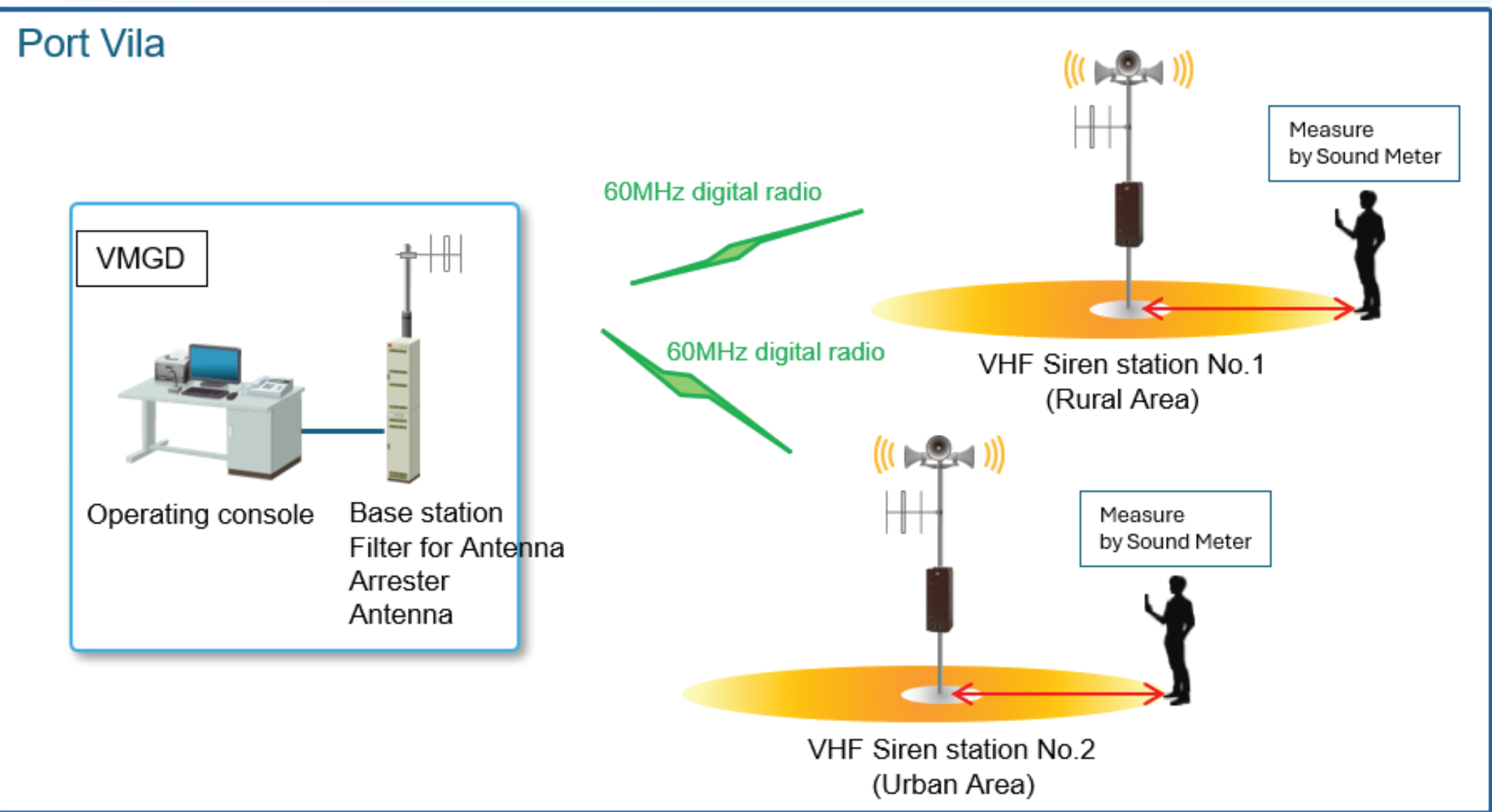


Fig1 System Diagram of Early Warning System using 60 MHz band



Fig2 Location of Base station and Siren station

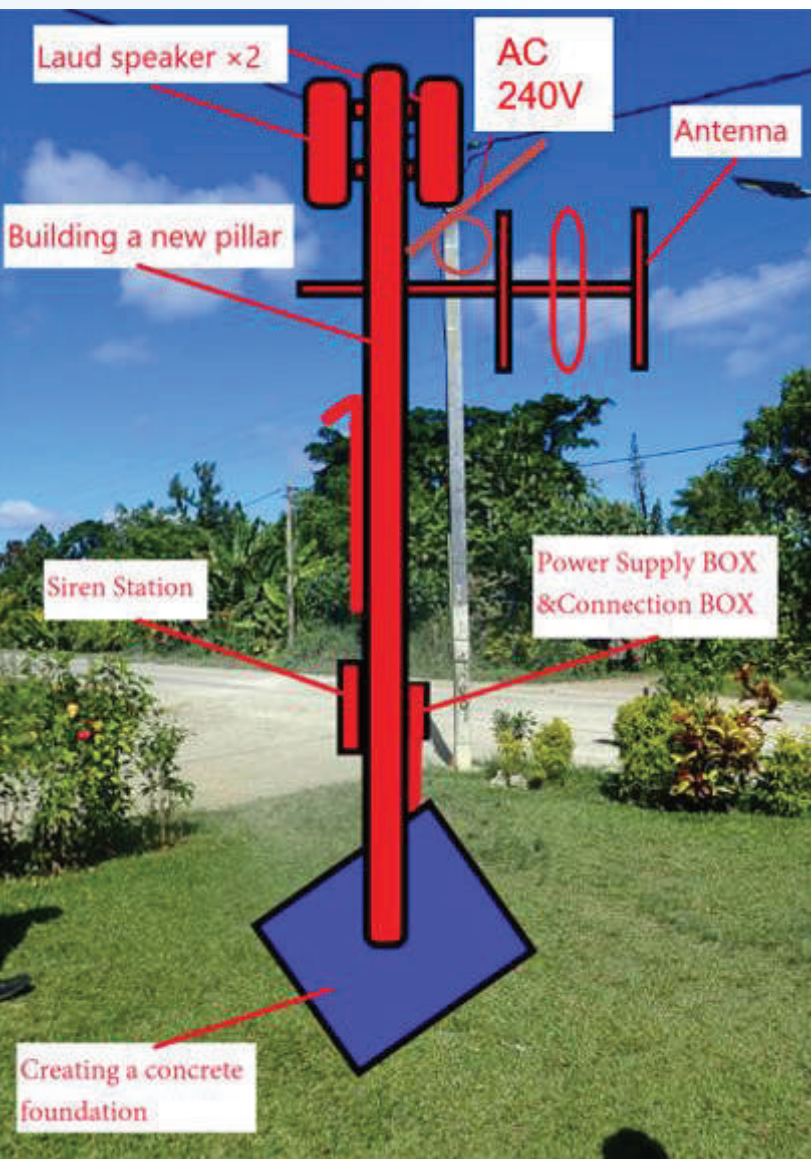
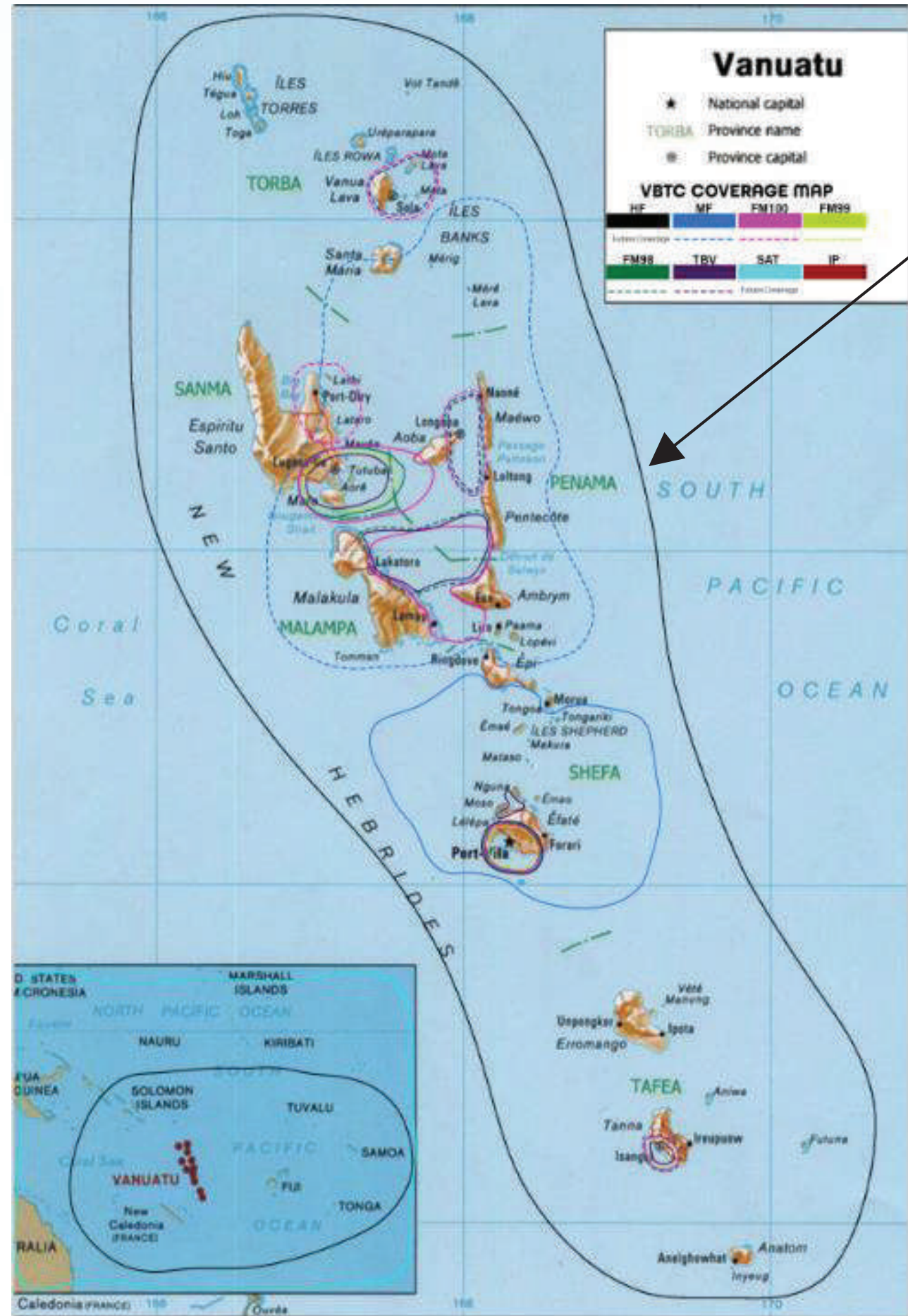


Fig3 Installation image of Siren station

(2) Feasibility Test of an Early Warning System Using Shortwave Bands (Existing Radio Broadcast) Covering the Entire Country, Including Remote Islands A feasibility test will be conducted using the existing radio broadcast infrastructure as an early warning system. In this approach, a control signal (EWS signal) will override the regular HF (shortwave) radio broadcast, which covers the entirety of Vanuatu, and be transmitted throughout the country.



The use of HF radio broadcasting is expected to facilitate the transmission of emergency information across the whole of Vanuatu.

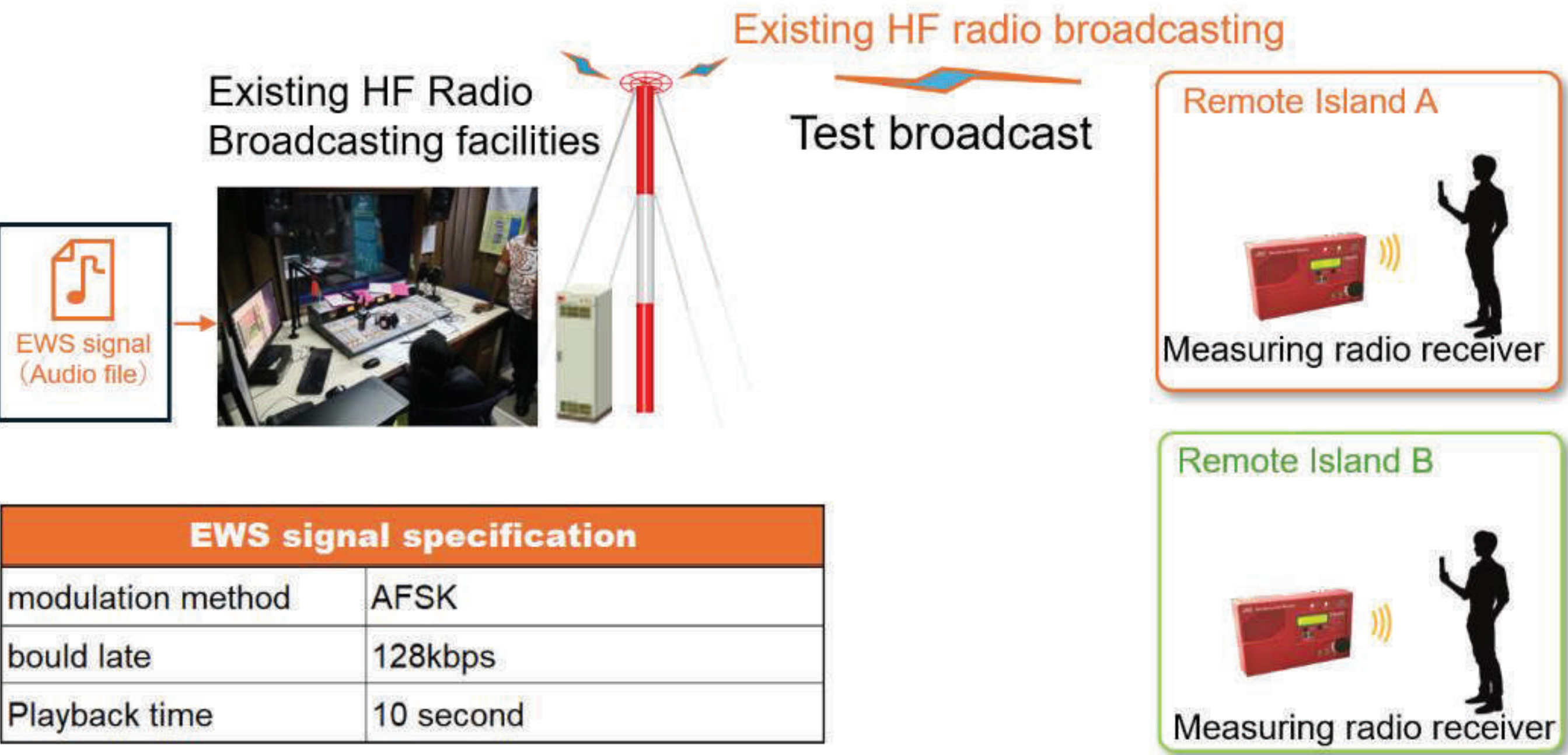


Fig 4 Early warning system using existing HF radios

Project timeline

Activity items	2025 Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2026 Jan	Feb	Mar
1. Preparation phase												
2. Planning and Investigation phase												
3. Interim reporting phase												
4. Equipment Procurement and Transportation Phase												
5. Installation phase												
6.Operation and evaluation phase												
7. Final review phase												
8. Final reporting phase												

Fig5 Project timeline

Relevant stakeholders

- Department of Communications and Digital Transformation (“DCDT”)
- National Disaster Management Office (NDMO)
- Vodafone Vanuatu
- Vanuatu Meteorology and Geohazards Department (VMGD)
- Telecommunications, Radiocommunications and Broadcasting Regulator (TRBR)
- Vanuatu Broadcasting &Television Corporation (VBTC)
- Japan Telecommunications Engineering and Consulting Service (JTEC)
- Japan Radio co., Ltd (JRC)

Future plans

The issues identified during this pilot project will be clarified and used to drive future system improvements. Enables the rollout of this pilot project’s outcomes to countries with similar environments, including Vanuatu.



2024 EBC-J

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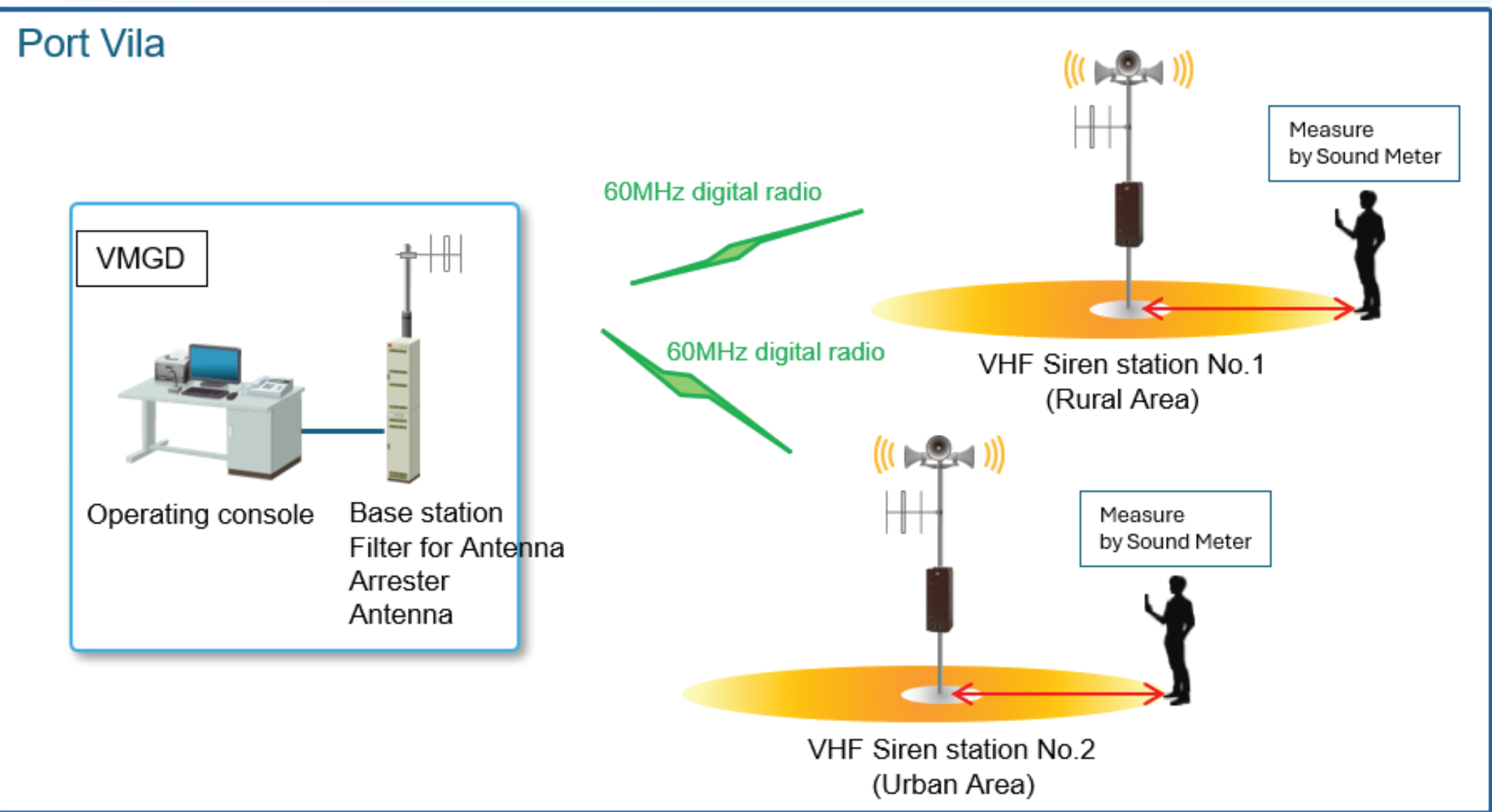


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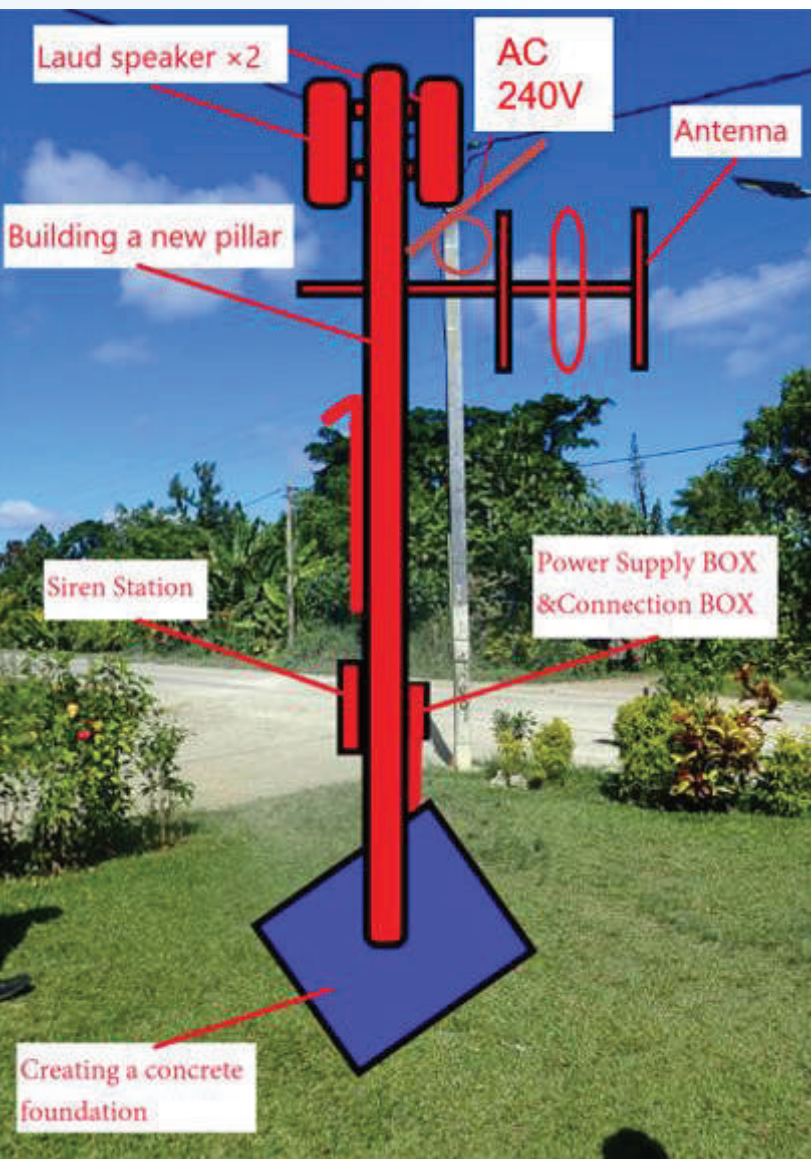
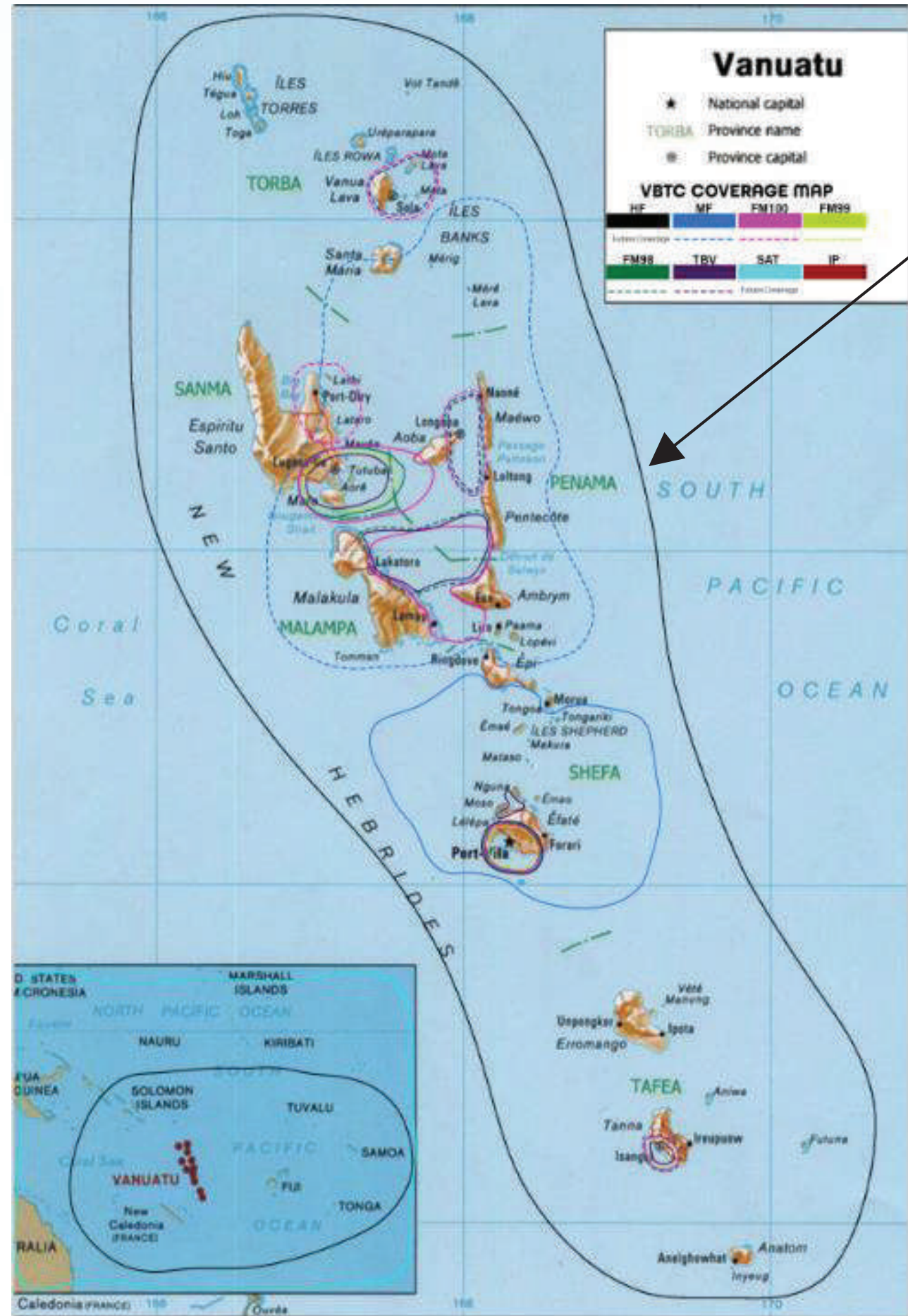


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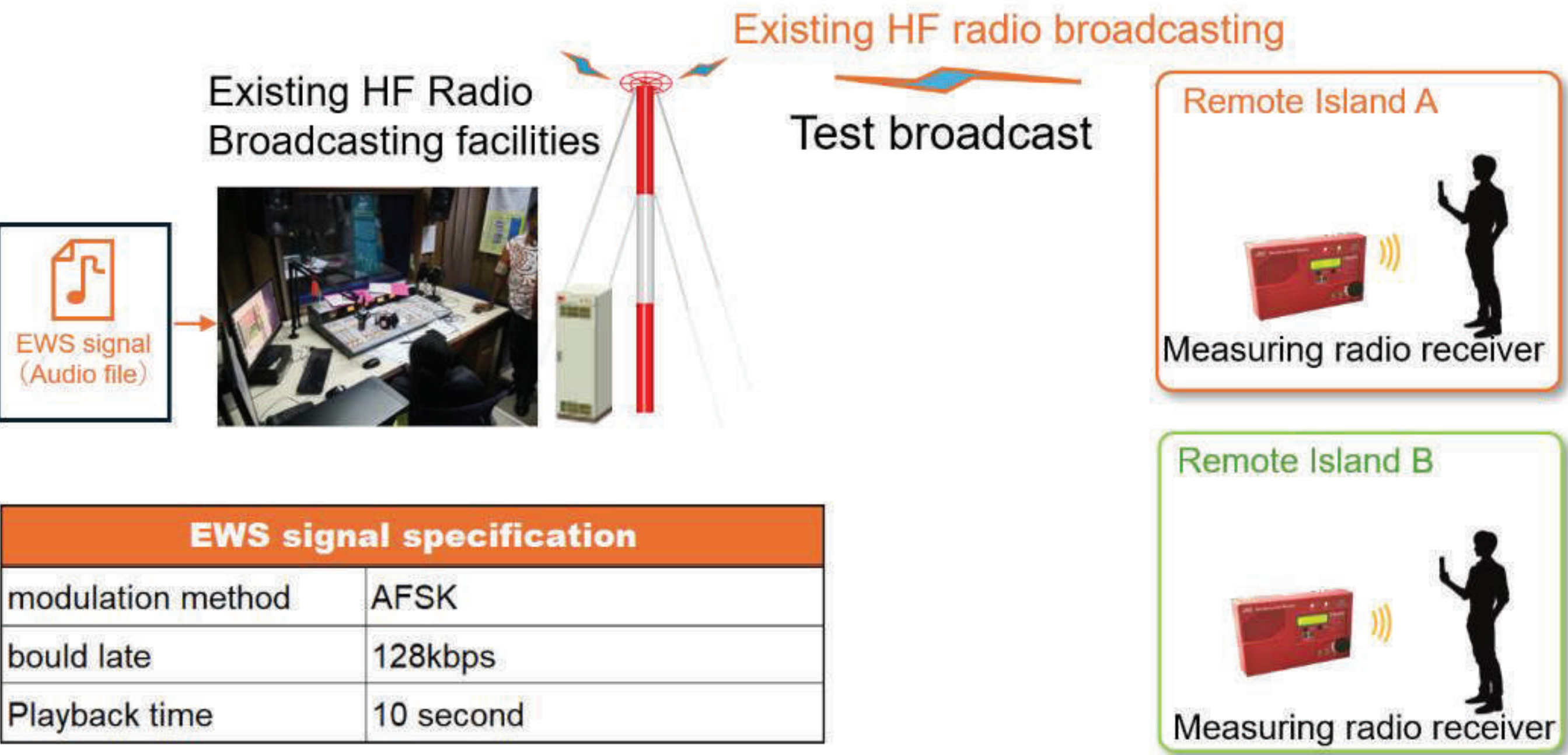


Fig 4 Early warning system using existing HF radios

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2019 EBC-J Exchange of Research on Latest ICTs in Disaster Management in Pacific

Project Objectives

This project aimed to improve disaster management capacity in Pacific Island Countries through the exchange of research and practical experiences in using ICT. By focusing on shared challenges such as limited resources and frequent natural hazards, it created opportunities for governments and experts to learn from each other and explore solutions adaptable across the region.

Share each country's experiences and challenges in applying ICT for disaster risk management. Investigate the current status of communication and early warning systems in Vanuatu and neighboring countries.

- Share each country's experiences and challenges in applying ICT for disaster risk management.
- Investigate the current status of communication and early warning systems in Vanuatu and neighboring countries.
- Explore appropriate multi-hazard Early Warning Systems (EWS) models for regional use.
- Facilitate practical knowledge exchange through workshops and study visits (e.g., Tonga's NEWS and disaster management facilities in Japan).
- Strengthen regional resilience by replicating effective ICT approaches and promoting continuous information sharing.

Project timeline

- Jan 2020: Approved by APT(COVID-19 delayed activities (2020–2022))
- Aug 2021: Interim progress report at ADF-18 (virtual)
- Jan 2024: Revival meeting
- Apr 2024: Tonga field visit to NEWS facilities.
- Jul 2024: Regional workshop in Vanuatu with 4 Pacific countries.
- Oct 2024: Research visit to Japan (Tokyo & Sendai).
- Mar 2025: Final report

Relevant stakeholders

- Department of Communications and Digital Transformation ("DCDT")
- National Disaster Management Office (NDMO)
- Vanuatu Meteorology and Geohazards Department (VMGD)
- Telecommunications, Radiocommunications and Broadcasting Regulator (TRBR)
- Japan Telecommunications Engineering and Consulting Service (JTEC)

Key Activities & Outcomes

April 2024 – Tonga Field Visit:

Disaster management officials from Vanuatu and Japan team inspected Tonga's National Emergency Warning System (NEWS) as part of a study visit. During their time in Tonga, the team visited MEIDECC along with the national Meteorological and Geological Services, where the team received explanations on how different data sources are combined to issue timely alerts. The team also toured the Tonga Broadcasting Commission facilities to see how emergency information is delivered to the public, and observed tsunami siren tests in nearby communities, which demonstrated how the system reaches residents in real situations.

Outcome: Vanuatu officials recognized the importance of adopting a multi-hazard Early Warning System (EWS), rather than focusing only on single hazards like tsunamis. Inspired by Tonga's model, they highlighted the need to adapt similar systems to Vanuatu's context, where cyclones, volcanic eruptions, earthquakes, and tsunamis all pose significant risks.

July 2024 – Regional Workshop (Vanuatu):

In July 2024, a three-day regional workshop was held in Vanuatu, bringing together participants from four neighboring countries: Vanuatu, Tonga, Solomon Islands, and Papua New Guinea. Each country presented its disaster risk management (DRM) initiatives and challenges, providing an opportunity for mutual learning. In addition, participants conducted site visits to key facilities, including tsunami siren installations, the Vanuatu Police Force communication center, and the NDMO Emergency Operations Center, where they observed actual emergency response operations.



Outcome

Through the workshop, participants shared the recognition that strengthening regional cooperation is essential to address common vulnerabilities. In particular, discussions highlighted the potential for developing a common ICT-based disaster management platform across the Pacific region, which could complement limited resources and personnel at the national level.

October 2024 – Research Visit to Japan:

In October 2024, disaster management officials from Vanuatu and Papua New Guinea were invited to Japan for a one-week study visit. Through this program, participants learned about Japan's disaster management policies and regulatory framework. They also visited advanced research and operational institutions, including the Japan Aerospace Exploration Agency (JAXA) in Tokyo and the Resilient ICT Research Center at the National Institute of Information and Communications Technology (NICT) in Sendai.

At the local level, participants observed community practices by visiting Sumida City's flood preparedness systems and the Japan Radio Co., Ltd. (JRC) Advanced Technology Center in Nagano. The program concluded with demonstrations of disaster-response technologies, such as resilient optical cables introduced by Ocean Cable & Communications (OCC).

Outcome

The visit exposed participants to advanced ICT-based disaster management solutions, including satellite-based monitoring, resilient communication networks, and multi-hazard early warning systems. Inspired by these examples, participants emphasized the importance of adapting proven technologies to Pacific contexts to strengthen early warning and response capacities in their own countries.

Future Plans & Expected Impact

The project has laid the foundation for resilient ICT infrastructure in Pacific disaster management. Next steps include deploying Tonga's multi-hazard EWS model in neighboring islands, conducting joint drills, and integrating ICT tools (satellite, radio, sirens) into national plans. Ongoing support from Japan and development partners will focus on training and system maintenance.

Expected impact: stronger early warning systems and improved regional coordination, enhancing community resilience.



2019 EBC-J Exchange of Research on Latest ICTs in Disaster Management in Pacific

Project Objectives

This project aimed to improve disaster management capacity in Pacific Island Countries through the exchange of research and practical experiences in using ICT. By focusing on shared challenges such as limited resources and frequent natural hazards, it created opportunities for governments and experts to learn from each other and explore solutions adaptable across the region.

Share each country's experiences and challenges in applying ICT for disaster risk management. Investigate the current status of communication and early warning systems in Vanuatu and neighboring countries.

- Share each country's experiences and challenges in applying ICT for disaster risk management.
- Investigate the current status of communication and early warning systems in Vanuatu and neighboring countries.
- Explore appropriate multi-hazard Early Warning Systems (EWS) models for regional use.
- Facilitate practical knowledge exchange through workshops and study visits (e.g., Tonga's NEWS and disaster management facilities in Japan).
- Strengthen regional resilience by replicating effective ICT approaches and promoting continuous information sharing.

Project timeline

- Jan 2020: Approved by APT(COVID-19 delayed activities (2020–2022))
- Aug 2021: Interim progress report at ADF-18 (virtual)
- Jan 2024: Revival meeting
- Apr 2024: Tonga field visit to NEWS facilities.
- Jul 2024: Regional workshop in Vanuatu with 4 Pacific countries.
- Oct 2024: Research visit to Japan (Tokyo & Sendai).
- Mar 2025: Final report

Relevant stakeholders

- Department of Communications and Digital Transformation ("DCDT")
- National Disaster Management Office (NDMO)
- Vanuatu Meteorology and Geohazards Department (VMGD)
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