

## **Appendix 5.2**

### **Resilient Artificial Intelligence of Things (AIoT) Green Energy System with Real-time Solution for Effective Aquaculture (REAS-SEA)**

#### **Face-2-Face Project Review and Field Test Trip**

#### **Report Form**

##### **I. Proposer:**

Name:	Ngo Duc Luu
Position:	Project member
Institution:	Bac Lieu University, Vietnam

##### **II. Objective:**

###### **Project meeting:**

###### ***Face to face meeting:***

Collaborate with project members the REAS-SEA project. To enhance knowledge sharing, collaboration, and innovation within the project team and its partners, the seminar aims to conduct a comprehensive project review. To join a meeting face to face and to final reports on the project and facilitate knowledge exchange, collaboration and innovation among project members and partners in future.

The final report from each team and future activities for cooperate with each other:

+ Soitec, UTokyo, IICT, PTIT team: System and algorithm design; Sensing node design and testing; Controllers design and testing, System optimization.

+ NTU, BLU, IICT team: Field test, data analysis.

+ UTokyo & IICT, MMU, LEO, NIPIC team: Gateway design and testing; Cloud and database; System fabrication and verification

###### ***Field test trip***

Collaborate with project members the REAS-SEA project. To enhance knowledge sharing, collaboration, and innovation within the project team and its partners, the seminar aims to conduct a comprehensive project review. To join a meeting face to face and to final reports on the project and facilitate knowledge exchange, collaboration and innovation among project members and partners in future.

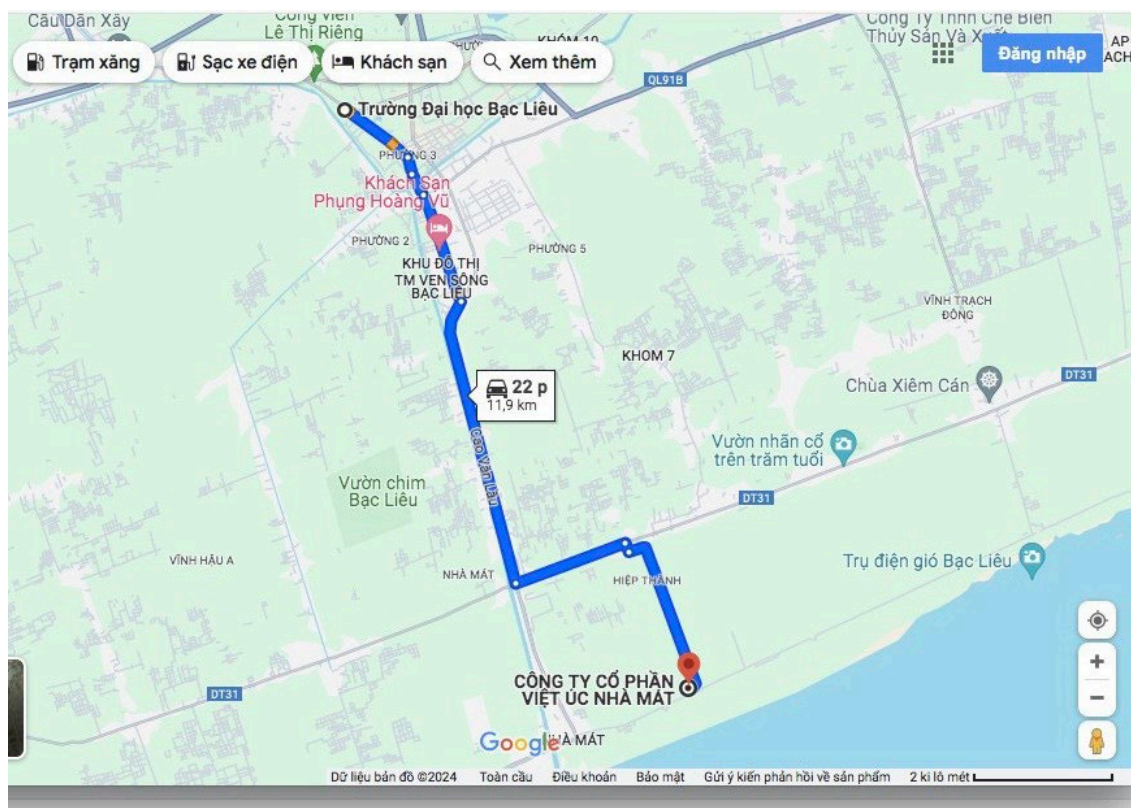


Figure 01: Maps from Bac Lieu University to Viet Uc company.

BLU aquaculture laboratory at 178 Vo Thi Sau, Ward 8, Bac Lieu City, Bac Lieu Province, Vietnam: Experimental area of the Faculty of Aquaculture: research on water quality analysis, shrimp diseases, nutrition, seed production and shrimp farming, we hope share to each member about activity of BLU, we hope share to each member about activity of BLU aquaculture laboratory.

+ Viet Uc Seafood Corporation, Giong Nhan Hamlet, Hiep Thanh Commune, City. Bac Lieu, Bac Lieu Province, Vietnam, <https://vietuc.com/en> (about 12 km from Bac Lieu University): Viet Uc Company is currently farming shrimp using high technology, having achieved prestigious international certifications such as BAP (Certificate of Good Aquaculture Practices), ASC (an international certification for certified seafood). responsible farming, minimizing negative impacts on the environment), disease-free facilities according to recommendations of the World Organization for Animal Health (OIE), members of the REAS-SEA project want to discuss the advantages and the difficulties the company is facing and directly observe to find solutions together in the near future. At the end of the project, the team still finds resources to further develop the idea to complete the product for the market.

### III. Schedule:

Date: March 27-28, 2024

Venue:

#### **Project meeting:**

Bac Lieu University (NTU), 178 Vo Thi Sau, Ward 8, Bac Lieu City, Bac Lieu Province, Vietnam.

#### **Address of field test site:**

+ BLU aquaculture laboratory at 178 Vo Thi Sau, Ward 8, Bac Lieu City, Bac Lieu Province, Vietnam.

+ Viet Uc Seafood Corporation, Giong Nhan Hamlet, Hiep Thanh Commune, City. Bac Lieu, Bac Lieu Province, Vietnam (about 12 km from Bac Lieu University)

Due to the very tight schedule and requirements for all the preparations, so IICT member did not come Bac Lieu University and join online.

Date and time	Activities	Participant
<b>Day 1: 27/3/2024, F2F Seminar</b>		
14.00 - 15.30	<ul style="list-style-type: none"> <li>- F2F Seminar for project review</li> <li>+ Soitec, UTokyo, IICT, PTIT team: System and algorithm design; Sensing node design and testing; Controllers design and testing, System optimization.</li> <li>+ NTU, BLU, IICT team: Field test, data analysis.</li> <li>+ UTokyo &amp; IICT, MMU, LEO, NIPIC team: Gateway design and testing; Cloud and database; System fabrication and verification</li> </ul>	Ngo Duc Luu (BLU) Nguyen Thi Hong Van(BLU) Tran Thi My Hanh (NTU); Nguyen Ngoc Mai Khanh (UTokyo) Nguyen Thi Bich Yen (Soitec)- <a href="#">join online via Zoom</a> Aromhack Saysanasongkham (IICT)- <a href="#">join online via Zoom</a> Foo Yee Loo (MMU)- join online via Zoom Padapxay SAYAKHOT(IICT)- join online via Zoom Phuangkeo Keophengthong(IICT)- join online via Zoom Nguyen Tan Sy (NTU) - join online via Zoom Ngo Van Manh (NTU) - join online via Zoom
15.30 – 16.00	<b>Break</b>	

16.00- 18.00	<ul style="list-style-type: none"> <li>- F2F Seminar for project review, Discuss on results of experiments, Data analysis, System optimization</li> <li>+ Soitec, UTokyo, IICT, PTIT team: System and algorithm design; Sensing node design and testing; Controllers design and testing, System optimization.</li> <li>+ NTU, BLU, IICT team: Field test, data analysis.</li> <li>+ UTokyo &amp; IICT, MMU, LEO, NIP ICT team: Gateway design and testing; Cloud and database; System fabrication and verification</li> </ul>	<p>Ngo Duc Luu (BLU)          Nguyen Thi Hong Van(BLU)          Tran Thi My Hanh (NTU);          Nguyen Ngoc Mai Khanh (UTokyo)          Nguyen Thi Bich Yen (Soitec)-  <a href="#">join online via Zoom</a>          Aromhack Saysanasongkham (IICT)- <a href="#">join online via Zoom</a>          Foo Yee Loo (MMU)- join online via Zoom          Padapxay SAYAKHOT(IICT)- join online via Zoom          Phuangkeo          Keophengthong(IICT)- join online via Zoom          Nguyen Tan Sy (NTU) - join online via Zoom          Ngo Van Manh (NTU) - join online via Zoom</p>
<b>Day 2: 28/3/2024, Field Test Trip &amp; Next Plan Discussion</b>		
8.00- 10.00	<ul style="list-style-type: none"> <li>- Meeting for review of field test trip, discuss about system at BLU aquaculture laboratory, Bac Lieu city</li> <li>- Discuss together</li> </ul>	<p>Ngo Duc Luu (BLU)          Nguyen Thi Hong Van(BLU)          Tran Thi My Hanh (NTU);          Nguyen Ngoc Mai Khanh (UTokyo)</p>
10.00 - 10.15	<b>Break</b>	
10:15- 12.00	<ul style="list-style-type: none"> <li>- Meeting for review of field test trip, discuss about system at BLU aquaculture laboratory, Bac Lieu city</li> <li>- Discuss together</li> </ul>	<p>Ngo Duc Luu (BLU)          Nguyen Thi Hong Van(BLU)          Tran Thi My Hanh (NTU);          Nguyen Ngoc Mai Khanh (UTokyo)</p>
12.00 - 13.00	<b>Lunch</b>	
13.00 - 15.30	Visit a shrimp farming company that applies modern technology to listen to the advantages and disadvantages of shrimp farmers when using new	<p>Ngo Duc Luu (BLU)          Nguyen Thi Hong Van(BLU)          Tran Thi My Hanh (NTU);          Nguyen Ngoc Mai Khanh (UTokyo)</p>

	equipment and tools.	
15:30 - 16:00	<b>Break</b>	
16:00 – 18:00	<ul style="list-style-type: none"> <li>- Back to BLU</li> <li>- Summarize all activities and discuss, final report of project</li> </ul>	Ngo Duc Luu (BLU) Nguyen Thi Hong Van (BLU) Tran Thi My Hanh (NTU); Nguyen Ngoc Mai Khanh (UTokyo) Nguyen Thi Bich Yen (Soitec) - <b>join online via Zoom</b> Aromhack Saysanasongkham (IICT)- <b>join online via Zoom</b> Foo Yee Loo (MMU)- join online via Zoom Padapxay SAYAKHOT (IICT)- join online via Zoom Phuangkeo Keophengthong (IICT)- join online via Zoom Nguyen Tan Sy (NTU) - join online via Zoom Ngo Van Manh (NTU) - join online via Zoom

#### IV. Participants:

Due to the very tight schedule and requirements for all the preparations, so IICT member did not come Bac Lieu University and join online.

No.	Name	Organization
1	Tran Thi My Hanh	Nha Trang University (NTU), Vietnam
2	Ngo Duc Luu	Bac Lieu University (BLU), Vietnam
3	Nguyen Thi Hong Van	Bac Lieu University (BLU), Vietnam
4	Dr. Nguyen Ngoc Mai Khanh	The University of Tokyo, Japan (U-Tokyo), Japan <b>Self-sponsored</b>
5	Ms. Nguyen Thi Bich Yen	Soitec, Singapore- <b>join online via Zoom</b>
6	Aromhack Saysanasongkham	Institute of Information and Communication Technology (IICT), Laos- <b>join online via Zoom</b>
7	Dr Nguyen Tan Sy	Nha Trang University (NTU), Vietnam- join online via Zoom
8	Dr. Ngo Van Manh	Nha Trang University (NTU), Vietnam- join online via Zoom

9	Dr. Padapxay Sayakhot	Institute of Information and Communication Technology (IICT), Laos- join online via Zoom
10	Mr. Phuangkeo Keophengthong	Institute of Information and Communication Technology (IICT), Laos- join online via Zoom
11	Dr. Foo Yee Loo	Multimedia University (MMU), Malaysia- join online via Zoom

## **V. Summary of the activities corresponding to the objectives**

### **Day 1: 27/3/2024, F2F Meeting**

In this afternoon, F2F Seminar for project review, Dr Ngo Duc Luu introduced Bac Lieu University and its activities. Then each group takes turns introducing its activities: NTU, UTokyo, Soitec, IICT, MMU.

After that, NTU and BLU team presented an overview about field test, data analysis. They use equipment in the shrimp farm include sensors to monitor water quality parameters such as temperature, salinity, and dissolved oxygen, as well as actuators to control equipment such as aerators, feeders, and pumps. The sensors and actuators should be installed in strategic locations throughout the farm, such as in the intake and outflow canals, in the shrimp ponds, and in the feed storage area. The equipment should be connected to a central control unit, which can be a computer, and they use smartphone to control it. There are a number of different states of shrimps' activities recorded in the experiment such as being hungry, eating, and full.

Then, Ms Bich Yen (Soitec) presented about System and algorithm design; Sensing node design and testing; Controllers design and testing, System optimization. Dr Mai Khanh (UTokyo) introduced the gateway design and testing; Cloud and database; System fabrication and verification and the data processing of the sound data collected from the previous experiments for both indoor and outdoor experiments. She has presented about the issue of the presence of noise in the outdoor environment. By cutting the low frequency of the sound (which is normally the noise sound), the quality of the dataset has also been reduced as there was a loss in some features of the data. As a result, she was also working on a method to filter the noise from the input data rather than removing the low frequency method. Furthermore, she has also shown an interesting thing in using deep learning such as convolutional neural networks to perform the feature selection more dynamically and efficiently without having to select the features manually by hand, which is a labor-intensive task. Dr. My Hanh (NTU) presented an overview all activities and results of the REAS-SEA project (experiments, data analysis, field test trip, meeting online, international



conferences Q4, Patents submitted, Societal Impact of project). All members online and onsite discussed the project's contents together.

## **Day 2: 28/3/2024, Field Test Trip & Final Report.**

In the morning of 28 March 2024, we left from the Hotel at 7:00 AM to the field test shrimp farms and we started the journey by visiting an BLU aquaculture laboratory at Bac Lieu City. We look at the equipment. tools used for aquaculture and agriculture experiments. Bac Lieu is a province with a large shrimp farming output in Vietnam, people make a living from shrimp farming and the main services serving the aquaculture industry.

After we completed a visit to the laboratory, we had a group photo before moving to the shrimp farming company. In shrimp farm, Viet Uc Seafood Corporation, Giong Nhan Hamlet, Hiep Thanh Commune, City. Bac Lieu, Bac Lieu Province, Vietnam, <https://vietuc.com/en> (about 12 km from Bac Lieu University): Viet Uc Company is currently farming shrimp using high technology, having achieved prestigious international certifications such as BAP (Certificate of Good Aquaculture Practices), ASC (an international certification for certified seafood). responsible farming, minimizing negative impacts on the environment), disease-free facilities according to recommendations of the World Organization for Animal Health (OIE), members of the REAS-SEA project want to discuss the advantages and the difficulties the company is facing and directly observe to find solutions together in the near future. At the end of the project, the team still finds resources to further develop the idea to complete the product for the market. If the project continues to research and bring products to market, Viet Uc company will accompany the project. After that, we went back to Bac Lieu University to have a meeting: Discuss the final report of project and networks. Each team exchanged ideas and contributed to the project.

## **VI. Others**

