



**Appendix 4.2**

**Coastal Erosion Monitoring Platform Based on Wireless Sensor Networks and 3D  
Point Clouds from Airborne LiDAR  
[Knowledge Sharing and Networking]  
Report/Minutes**

**I. Organizer:**

Name:	Surasak Boonkla
Position:	Researcher (Project Leader)
Institution:	National Electronics and Computer Technology Center

**II. Program:**

Date: 6 November 2025

Venue: Queen Sirikit National Convention Center (QSNCC), 60 Queen Sirikit National Convention Center, Ratchadaphisek Road, Khlong Toei Sub-district, Khlong Toei District, Bangkok, Thailand

**Program Agenda:**

6 Nov.	08:00 – 08:15	Registration
		MC. Mr. Chakapat Chokchaisiri & Dr. Kasorn Galajit
	08:15 – 08:40	Opening speech by Director-General of the Department of Marine and Coastal Resources (DMCR), Thailand
		Welcome Remark by Dr. Thepchai Supnithi, President of Artificial Intelligence Association of Thailand (AIAT)
		Welcome Remark by Assoc. Prof. Dr. Teerayut Horanont Hub of Talents in AI and Innovation Next, Head School of Information Computer and Communication Technology (ICT), Sirindhorn International Institute of Technology (SIIT), Thammasat University, Thailand
		Welcome Remark by Mrs. Rungsima Tanthalakha, Director of the Biodiversity Program
		Welcome Remark by Dr. Hiroshi Emoto, National Institute of Information and Communications Technology (NICT), Japan
	08:40 – 09:00	Project summary and activities report by Dr. Surasak Boonkla, Project leader, National Electronics and Computer Technology Center
	09:00 – 09:20	Coastal erosion protection activities report in Thailand by representative of Coastal Resources Conservation Division, DMCR, Thailand
	09:20 – 10:40	Blue economy and funding opportunity by Professor Padermsak Jarayabhand, National Research Council of Thailand
	10:40 – 11:00	Research activities relating to coastal monitoring by Dr. Dian Handiani and Dr. Yessy Nirwana Kurniadi, Bandung National

		Institute of Technology (ITENAS), Indonesia
	11:00 – 11:20	Break
	11:20 – 11:40	N-Biopipe: Innovation for Coastal Production by Dr. Somprasong Thongkham, NANOTEC, National Science and Technology Development Agency, Thailand
	11:40 – 12:10	Coastal erosion protection activities report in Indonesia by Dr. Johan Risandi, invited speaker, Research Center for Oceanography, National Research and Innovation Agency (BRIN), Indonesia
	12:10 – 13:10	Lunch
	13:10 – 13:30	Hub of Talents in AI and Innovation Next by Assoc. Prof. Dr. Teerayut Horanont Hub of Talents in AI and Innovation Next, Head School of Information Computer and Communication Technology (ICT), Sirindhorn International Institute of Technology (SIIT), Thammasat University, Thailand
	13:30 – 13:50	Optimizing Above Ground Biomass Estimation using Remote Sensing and Machine Learning, a Mangrove Restoration Project Case study by Mr. Thein Tun Tun, Sirindhorn International Institute of Technology (SIIT), Thammasat University, Thailand
	13:50 – 14:10	Utilizing a Classification Tree for Rocky Terrain Detection in 3D Point Clouds for Coastal Erosion Studies by Dr. Akkharawoot Takhom, Faculty of Engineering, Thammasat University, Thailand
	14:10 – 14:30	Dominant wave height estimation based on spectral analysis for coastal erosion monitoring systems in real time by Dr. Kasorn Galajit, NECTEC, National Science and Technology Development Agency, Thailand
	14:30 – 14:50	Water Surface Level Estimation Based on the Fast Segment Anything Model for Coastal Monitoring Systems by Mr. Julathit Chetsawang, Sirindhorn International Institute of Technology, Thammasat University, Thailand
	14:50 – 15:10	Study on Adaptive Sampling Approach Using Signal Variance-Based Method for Energy-Efficient Wireless Sensor Networks in Coastal Monitoring by Mr. Aung Kyaw Min, Sirindhorn International Institute of Technology, Thammasat University, Thailand
	15:10 – 15:30	Break
	15:30 – 15:50	Study on YOLOv11-Enhanced Detection of Bamboo in Shoreline Protection Fences by Dr. Waranrach Viriyavit, Faculty of Informatics, Burapha University, Thailand
	15:50 – 16:10	Study on Wave Direction Estimation from Optical Satellite Imagery Using Multi-Stage Gabor Filter by Dr. Surasak Boonkla, NECTEC, National Science and Technology Development Agency, Thailand
	16:10 – 16:30	Study on Wave Direction Estimation Based on Local Gradient Techniques from Satellite Imagery for Coastal Dynamics Monitoring by Mr. Chakapat Chokchaisiri, TAIST-Science Tokyo program, National Science and Technology Development Agency, Thailand
	16:30 – 16:40	Closing Remark by project leader

**III. Participants:**

No.	Name	Organization
1	Surasak Boonkla	NECTEC
2	Jessada Karnjana	NECTEC
3	Intouch Wangteakondee	SIIT
4	Kasorn Galajit	NECTEC
5	Sharifah Hafizan Syed Ariffin	UTM
6	Shafishuhaza Sahlan	UTM
7	Akkharawoot Takhom	TU
8	Bachu Chewang Pelden	SIIT
9	Julathit Chetsawang	SIIT
10	Somrudee Deepaisarn	SIIT
11	Choermath Hongakkaraphan	SIIT
12	Aung Kyaw Min	SIIT
13	Thitichaya Ponglaowech	TU
14	Pakornkiat Phetpradab	TU
15	Thanaruk Theeramunkong	Professor, SIIT
16	Kaweewat Sricharoenchit	SIIT
17	Seelawadee Mordee	DMCR
18	Ubolwan Khamkaew	NECTEC
19	Oraphan Sungkajantranon	Kasetsart University Kamphaeng Saen Campus
20	Suthep Jualaong	Director of Coastal Resources Conservation Division, DMCR
21	Dian Handiani	ITENAS
22	Yessy Nirwana Kurniadi	ITENAS
23	Kong Phutphalla	CADT
24	Hongly Va	CADT
25	Johan Risandi	BRIN
26	Thepchai Supnithi	NECTEC
27	Teerayut Horanont	SIIT
28	Rungsima Tanthalakha	Director of program, NSTDA
29	Somprasong Thongkham	NANOTEC
30	Nawarat Krairapanond	AIT
31	Hiroshi Emoto	NICT
32	Chakapat Chokchaisiri	NECTEC
33	Thein Tun Tun	SIIT
34	Pinsak Suraswadi	General Director of DMCR
35	Chananya Kamolsuntorn	Kasetsart University
36	Warit Yuraniyama	SIIT
37	Saowaluck Bua-in	Institute for the Promotion of Teaching Science and Technology (IPST)
38	Thanate Kerdkaew	IPST
39	Kwanchanok Sattasuk	IPST
40	Duangchai Sookchaloem	KU
41	Kay Zin	KU

42	Natthida Sirinai	DMCR
43	Warunee Wannakon	DMCR
44	Jidapa Kaewyongjit	Toyota
45	Niramol Pratheepajitti	NECTEC

**IV. Summary of the activities corresponding to the objectives.**

1. The International Conference on Biodiversity (IBD) 2025 offers an opportunity for our members. This event is a perfect venue to share our research, build new collaborative partnerships with fellow researchers, and expand our network. This year our final meeting will be held in conjunction with IBD 2025. The meeting has several key objectives:

- **Knowledge Sharing and Dissemination:** We'll be sharing the research we've accomplished and publicly disseminating our project findings. This is a crucial step for expanding our network of collaborators.
- **Problem-Solving:** We'll address any outstanding project challenges to find solutions and move forward effectively.

2. The meeting started a little bit late behind schedule. The activities are as follows.

- The opening speech by Dr. Pinsak Suraswadi, general director of DMCR.
- The opening speech by Dr. Thepchai Supnithi by online from JAIST.
- The opening speech by Dr. Theerayut Horanond, head of school of information, computer, and communication technology (ICT), SIIT
- The opening speech by Dr. Hiroshi Emoto, NICT, Japan
- Group photo session
- Presentation of project summary by Dr. Surasak Boonkla, the project leader, NECTEC
- Presentation of coastal erosion protection activities report in Thailand by Mr. Suthep Jualaong, Coastal Resources Conservation Division, DMCR, Thailand
- Presentation of Blue economy and funding opportunity by Dr. Nawarat Krairapanond, Expert, Asian Institute of Technology.
- Presentation of Hub of Talents in AI and Innovation Next by Assoc. Prof. Dr. Teerayut Horanont
- Presentation of N-Biopipe: Innovation for Coastal Production by Dr. Somprasong Thongkham, NANOTEC. This presentation drew several questions from the audience.
- Presentation of coastal erosion protection activities report in Indonesia by Dr. Johan Risandi.
- Presentation of research activities relating to coastal monitoring by Dr. Dian Handiani and Dr. Yessy Nirwana Kurniadi, Bandung National Institute of Technology (ITENAS), Indonesia
- Presentation of Optimizing Above Ground Biomass Estimation using Remote Sensing and Machine Learning, a Mangrove Restoration Project Case study by Mr. Thein Tun Tun
- Presentation of Dominant wave height estimation based on spectral analysis for coastal erosion monitoring systems in real time by Dr. Kasorn Galajit.
- Presentation of Water Surface Level Estimation Based on the Fast Segment Anything Model for Coastal Monitoring Systems by Mr. Julathit Chetsawang and his team.



- Presentation of Study on Adaptive Sampling Approach Using Signal Variance-Based Method for Energy-Efficient Wireless Sensor Networks in Coastal Monitoring by Mr. Aung Kyaw Min and Ms. Bachu Chewang Pelden
- Presentation of Study on YOLOv11-Enhanced Detection of Bamboo in Shoreline Protection Fences by Mr. Kawewat Srirachoenchit
- Presentation of Wave Direction Estimation from Optical Satellite Imagery Using Multi-Stage Gabor Filter by Dr. Surasak Boonkla
- Presentation of Study on Wave Direction Estimation Based on Local Gradient Techniques from Satellite Imagery for Coastal Dynamics Monitoring by Mr. Chakapat Chokchaisiri
- Closing remarks by Dr. Surasak Boonkla

The result of this meeting is to share knowledge of the research relating to coastal erosion mitigation. Some participants from Kasetsart University were interested in the coastal protection using N-biotope and understand its utility, lower cost, and environmentally friendly in coastal protection. In addition, the hub of talent is another party that tries to encourage participants to join in the network hub of researchers in artificial intelligence.

**V. Others.**



Picture of the Activities




## INTERNATIONAL CONFERENCE ON BIODIVERSITY 2025

### Biodiversity and Humanity in Global Crisis

6 November 2025, 08.00 - 16.40 at Room MR101 Queen Sirikit National Convention Center (QSNCC)

### BREAKOUT SEMINAR : COASTAL EROSION MONITORING PLATFORM BASED ON WIRELESS SENSOR NETWORKS AND 3D POINT CLOUDS FROM AIRBORNE LIDAR: KNOWLEDGE SHARING AND NETWORKING

#### AGENDA

<p><b>08:00 - 08:15</b> <b>Registration</b> MC. Mr. Chakapat Chokchaisri &amp; Dr. Kasorn Galgiti</p> <p><b>08:15 - 08:40</b> <b>Opening speech by Director-General of the Department of Marine and Coastal Resources (DMCR), Thailand</b> Welcome Remark by Dr. Thepchol Supnithi, President of Artificial Intelligence Association of Thailand (AIAT)  Welcome Remark by Assoc. Prof. Dr. Teerayut Horanont, Hub of Talents in AI and Innovation Next, Head School of Information Computer and Communication Technology (ICT), Srinidhorn International Institute of Technology (SIIT), Thammasat University, Thailand  Welcome Remark by Dr. Hiroshi Emoto, National Institute of Information and Communications Technology (NICT), Japan</p> <p><b>08:40 - 09:00</b> <b>Project summary and activities report</b> by Dr. Surasak Boonkha, Project leader, National Electronics and Computer Technology Center</p> <p><b>09:00 - 09:20</b> <b>Coastal erosion protection activities report in Thailand</b> by representative of Coastal Resources Conservation Division, DMCR, Thailand</p> <p><b>09:20 - 10:40</b> <b>Blue economy and funding opportunity</b> by Professor Padermsak Jarayabhand, National Research Council of Thailand</p> <p><b>10:40 - 11:00</b> <b>Research activities relating to coastal monitoring</b> by Dr. Dian Handiani and Dr. Yeszy Nirwana Kurniadi, Bandung National Institute of Technology (ITENAS), Indonesia</p> <p><b>11:00 - 11:20</b> <b>Break</b></p> <p><b>11:20 - 11:40</b> <b>N-Biopipe: Innovation for Coastal Production</b> by Dr. Somprasong Thongkham, NANOTEC, National Science and Technology Development Agency, Thailand</p> <p><b>11:40 - 12:10</b> <b>Coastal erosion protection activities report in Indonesia</b> by Dr. Johan Riandi, Research Center for Oceanography, National Research and Innovation Agency (BRIN), Indonesia</p> <p><b>12:10 - 13:10</b> <b>Lunch</b></p> <p><b>13:10 - 13:30</b> <b>Hub of Talents in AI and Innovation Next</b> by Assoc. Prof. Dr. Teerayut Horanont, Hub of Talents in AI and Innovation Next, Head School of Information Computer and Communication Technology (ICT), Srinidhorn International Institute of Technology (SIIT), Thammasat University, Thailand</p>	<p><b>13:30 - 13:50</b> <b>Optimizing Above Ground Biomass Estimation using Remote Sensing and Machine Learning, a Mangrove Restoration Project Case study</b> by Mr. Thein Tun Tun, Srinidhorn International Institute of Technology (SIIT), Thammasat University, Thailand</p> <p><b>13:50 - 14:10</b> <b>Utilizing a Classification Tree for Rocky Terrain Detection in 3D Point Clouds for Coastal Erosion Studies</b> by Dr. Akkharawool Takhom, Faculty of Engineering, Thammasat University, Thailand</p> <p><b>14:10 - 14:30</b> <b>Dominant wave height estimation based on spectral analysis for coastal erosion monitoring systems in real time</b> by Dr. Kasorn Galgiti, NECTEC, National Science and Technology Development Agency, Thailand</p> <p><b>14:30 - 14:50</b> <b>Water Surface Level Estimation Based on the Fast Segment Anything Model for Coastal Monitoring Systems</b> by Mr. Julathit Chetsawang, Srinidhorn International Institute of Technology, Thammasat University, Thailand</p> <p><b>14:50 - 15:10</b> <b>Study on Adaptive Sampling Approach Using Signal Variance-Based Method for Energy-Efficient Wireless Sensor Networks in Coastal Monitoring</b> by Mr. Aung Kyaw Min, Srinidhorn International Institute of Technology, Thammasat University, Thailand</p> <p><b>15:10 - 15:30</b> <b>Break</b></p> <p><b>15:30 - 15:50</b> <b>Study on YOLOv7-Enhanced Detection of Bamboo in Shoreline Protection Fences</b> by Dr. Waranrach Viriyavit, Faculty of Informatics, Burapha University, Thailand</p> <p><b>15:50 - 16:10</b> <b>Study on Wave Direction Estimation from Optical Satellite Imagery Using Multi-Stage Gabor Filter</b> by Dr. Surasak Boonkha, NECTEC, National Science and Technology Development Agency, Thailand</p> <p><b>16:10 - 16:30</b> <b>Study on Wave Direction Estimation Based on Local Gradient Techniques from Satellite Imagery for Coastal Dynamics Monitoring</b> by Mr. Chakapat Chokchaisri, TAIST-Science Tokyo program, National Science and Technology Development Agency, Thailand</p> <p><b>16:30 - 16:40</b> <b>Closing Remark</b> by project leader</p>
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