

Appendix 4.2

**[Cyber to Real World Integrated Testbed for
Dam Safety Management and Water Governance System]
[Workshop/Training in Myanmar]
Report Form**

I. Organizer:

Name:	Prof. Thin Lai Lai Thein
Position:	Professor
Institution:	University of Computer Studies, Yangon (UCSY)

II. Program:

Date: 18-20 Mar 2025

Venue: 1. Novotel Yangon Max Hotel,
2. University of Computer Studies, Yangon

Program Agenda:

18 Mar	09:00 – 12:00	Venue: UCSY's meeting room - Progress of each organization
	12:00 – 13:30	Working lunch
	13:30 – 16:00	Venue: UCSY's meeting room - Further action plan
19 Mar	09:00 – 12:00	Venue: Hotel's meeting room - Workshop/ training #1- Installation and configuration on CyReal
	12:00 – 13:30	Working lunch
	13:30 – 16:00	Venue: Hotel's meeting room - Workshop/ training #2- Debugging and Verifying on CyReal
20 Mar	09:00 – 12:00	Venue: Hotel's meeting room - Workshop/ training #3- Further simulation on CyReal
	12:00 – 13:30	Working lunch
	13:30 – 16:00	Venue: Hotel's meeting room - Workshop/ training #4- Further emulation on CyReal

III. Participants:

No.	Name	Organization	Itinerary
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1.	Dr. Thin Lai Lai Thein	UCSY	NA
2.	Ms. Zin May Oo	UCSY	NA
3.	Ms. Moe Moe Myint	UCSY	NA
4.	Dr. Nay Win Aung	UCSY	NA
5.	Dr. Somsanouk Pathoumvanh	NUOL	On-line participation
6.	Dr. Cheab Sovuthy	CADT	17/3/2024 (in) 21/3/2024 (out)
7.	Dr. Ly Rottana	CADT	17/3/2024 (in) 21/3/2024 (out)
8.	Dr. Kanokvate Tungpimolrut	NECTEC	17/3/2024 (in) 21/3/2024 (out)
9.	Dr. Rangsarit Vanijjirattikhan	NECTEC	17/3/2024 (in) 21/3/2024 (out)
10.	Dr. Jennifer Dela Cruz	MU	On-line participation
11.	Dr. Febus Reidj Cruz	MU	On-line participation
12.	Dr. Toshiyuki Miyachi	NICT	On-line participation
13.	Dr. Shinsuke Miwa	NICT	On-line participation
14.	Mr. Shinichi Miyakawa	NICT	On-line participation
15-16.	Representatives from MOEP	MOEP	17/3/2024 (in) 21/3/2024 (out)
17-20	Representatives from MOALI	MOALI	NA

Remarks: Please see the name list of all participants including representatives of MOEP and MOALI in another attached file.

IV. Summary of the activities corresponding to the objectives

In this 3-day workshop and training, the following three objectives were set. The meeting was successfully completed as scheduled. A summary of each objective is shown below.

Objective #1: To organize a hands-on workshop/training for project members and end users in Myanmar (MOALI and MOEP) on how to set up and start using the CyReal testbed, including transferring all programming code, datasets, software, toolboxes, etc., onto the CyReal testbed, as well as debugging and verifying the simulation results by the trainer from NICT team.

- NICT team created an environment for 10 participants to have a hands-on workshop.
- The use cases from MOALI and MOEP, which are used in their daily operations, were demonstrated in the workshop. The main software, HEC-RAS, is Windows-based, while all software and middleware on the CyReal Testbed are Linux-based. Therefore, all users needed to create a Windows Virtual Machine on CyReal Testbed.
- Some sample data for running HEC-RAS on the CyReal Testbed was also transferred via VPN.

- The preliminary simulation and visualization of the results were also conducted.

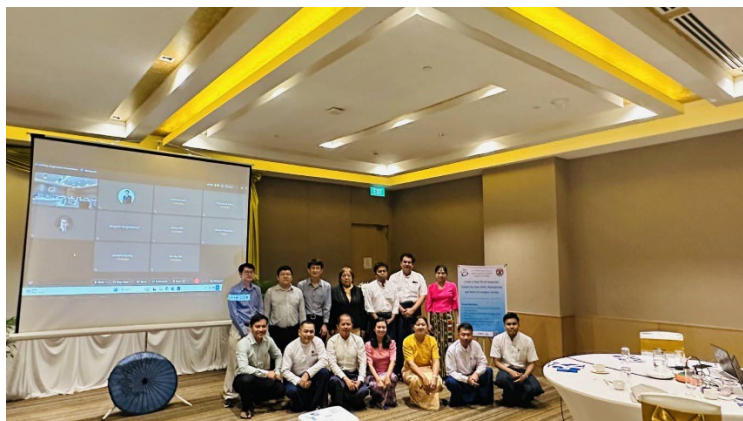
Objective #2: To learn more about how to perform additional simulations and emulations on the CyReal testbed and identify the necessary hardware and software components.

- MOALI discussed the necessity of an automatic rain gauge to collect rainfall data in the targeted area near the dam, and plans to use this data for the emulation mode on the CyReal Testbed. MOALI and MOEP will contact the NICT team again after finalizing the specifications for the automatic rain gauge and determining how to integrate this information into the CyReal Testbed.
- NECTEC team has used the daily information collected from sensors installed at each dam site to predict the reservoir water level for the next 5-15 days. The programming code for the prediction/simulation is based on Python, an open-source software, so duplicating the code to run the prediction on the CyReal Testbed can be easily done. For the next step, how to link the real-time data from the sensors and use the CyReal Testbed as an emulator for predicting the reservoir water level in real-world situations will be discussed in more detail.

Objective #3: To organize a meeting among all project members to update the progress of each organization and discuss further action plans for each organization.

- The UCSY team presented progress on inflow prediction based on historical data received from MOALI and the machine learning technique (Long Short-Term Memory), which is in line with the approach the NECTEC team has used.
- The CADT team has had internal discussions with a lecturer at CADT who has expertise in machine learning and a good relationship with dam operators and /or the Mekong River Committee. Furthermore, CADT is in discussions with local partners regarding the availability of necessary data.
- NUOL and Mapua University are also in discussions with their local partners.

V. Others





VI. Workshop Evaluation Questionnaire

WORKSHOP EVALUATION QUESTIONNAIRE

Workshop Name: ___ Workshop/Training on Cyber to Real World Integrated Testbed for Dam Safety Management and Water Governance System

Location: _ Novotel Yangon Max Hotel, Yangon, Myanmar _

Date: ___18 – 20 March 2025___

Participant Name (optional): ___Mr. Aye Chan Myint Thein ___



ICT Virtual Organization of ASEAN Institutes and NICT (ASEAN IVO)

Institution /Company name of participant (optional): ____ MOEP _

Job Title: ____Representatives _____

Please give us your comments here:

Thank you for inviting me to attend this event. The workshop/training are very
Interesting and effecting to us. The workshop/training successfully facilitated the
Installation of essential software, training on CyReal Testbed utilization with TENTOU
(Toolkits for Empowering Network Testbed Operation and Utilization), Integration of
programming codes, data transferred for running HEC-RAS on CyReal Testbed, and create
dataset. Productive discussions were held on the progress and future activities of
member countries, as well as the necessary software and hardware components for
continued developed. In the future, the project benefic significant potential in
leveraging advanced storage management, and provide early warnings for flood risks,
ultimately contributing to the reduction of disaster-related damages.
