Visual IoT Network for Environment Protection and Disaster Prevention

Background :

One of the leading causes of air pollution problems (e.g., PM2.5) is a forest fire. It is found that about 92% of burned area in Chiang Mai are in the conservation forest and national park. Furthermore, with the problem of high steep mountainous terrain in conservation and national parks and insufficient patrol staff, it is very difficult to do the effective monitoring and firefighting task with a quick response. Using Visual IoT in the forest fire monitoring system will increase the ability to accurately assess and provide information about the situation of the scene quickly. In this project, Visual IoT will be used in conjunction with other sensors such as satellite image in order to assess the situation of forest fire.

Targets:

- System of visual IoT cameras with transmission modules
- Algorithms for forest fire detection
- Data visualization

Speaker: Dr. Kanokvate Tungpimolrat (Project Leader), Jessada Karnjana (Speaker)
National Electronics and Computer Technology Center, Thailand

Visual IoT Network for Environment Protection and Disaster Prevention

Project Members :

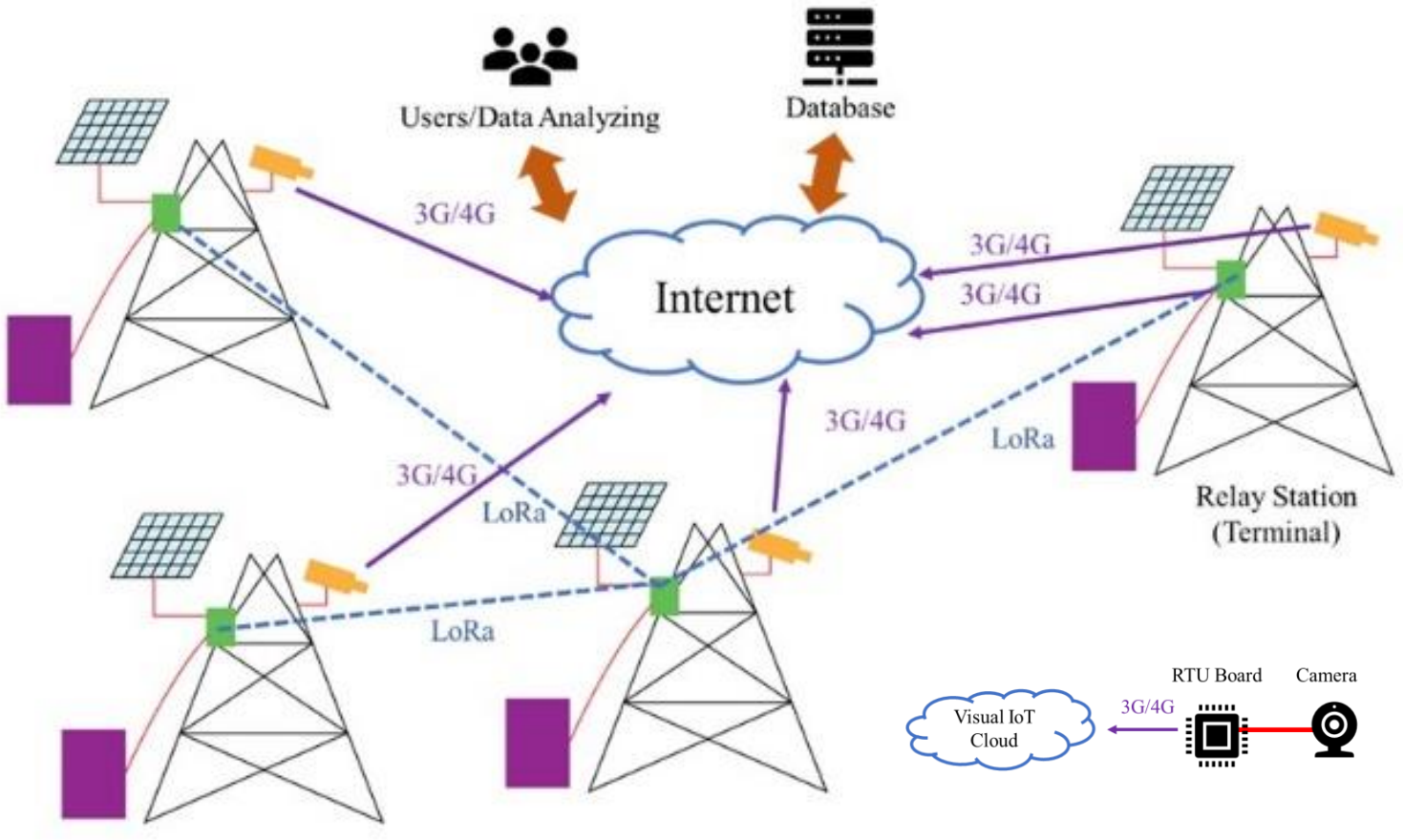
National Institute of Information and Communications Technology (NICT)
Mapua University
University of Computer Studies, Yangon (UCSY)
National University of Laos (NUOL)
National Electronics and Computer Technology Center (NECTEC)
Sirindhorn International Institute of Technology (SIIT)
King Mongkut's Institute of Technology Ladkrabang (KMITL)

Project Duration : June 2022 – May 2024 (2 years)

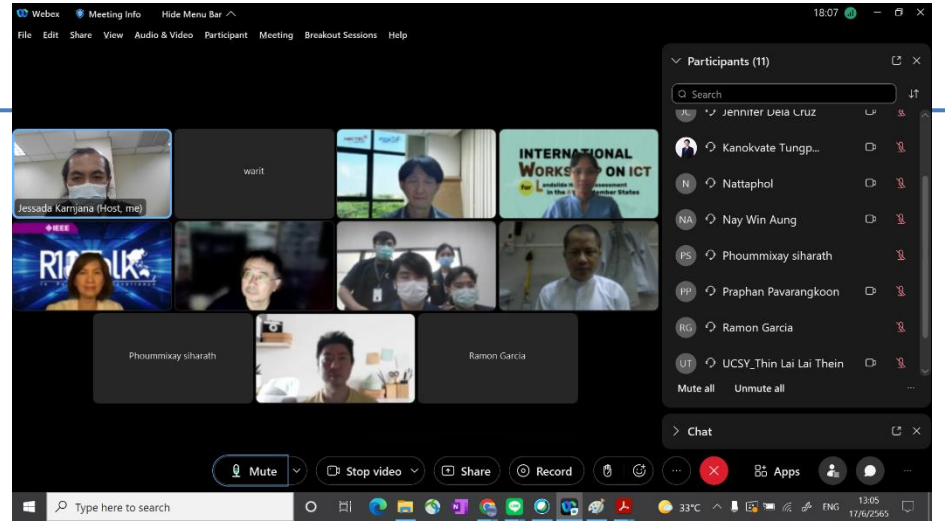
Project Budget: 40,000 USD/year

Project Activities

System Overview

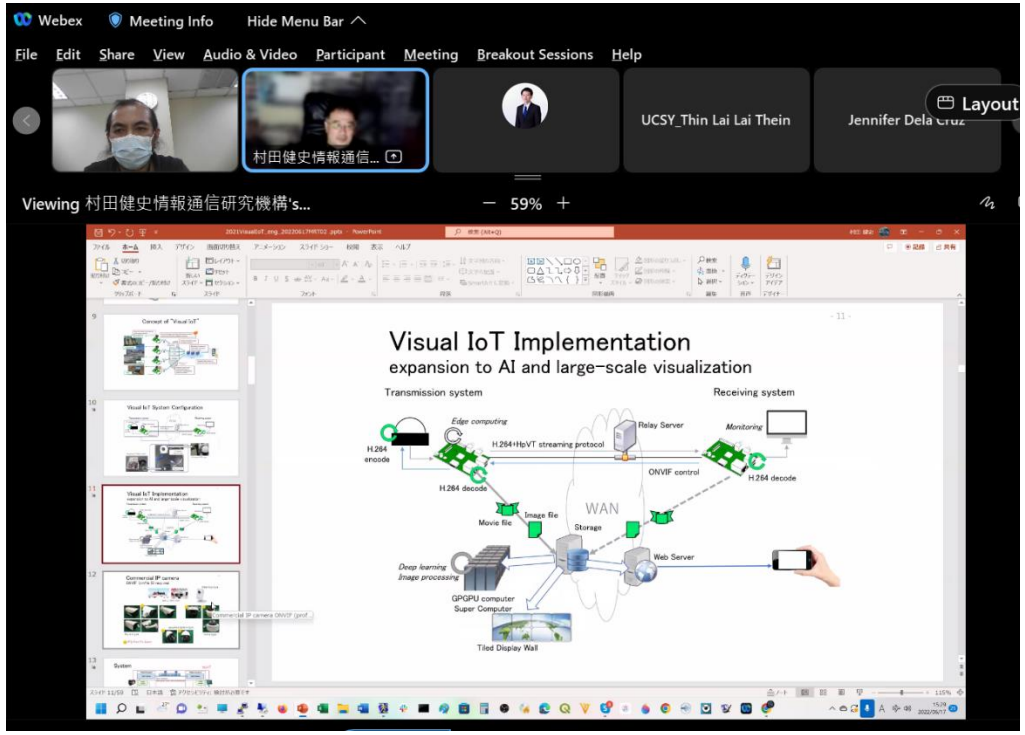


Project Activities



2022 (Jun, July, Aug, Sep, Oct)

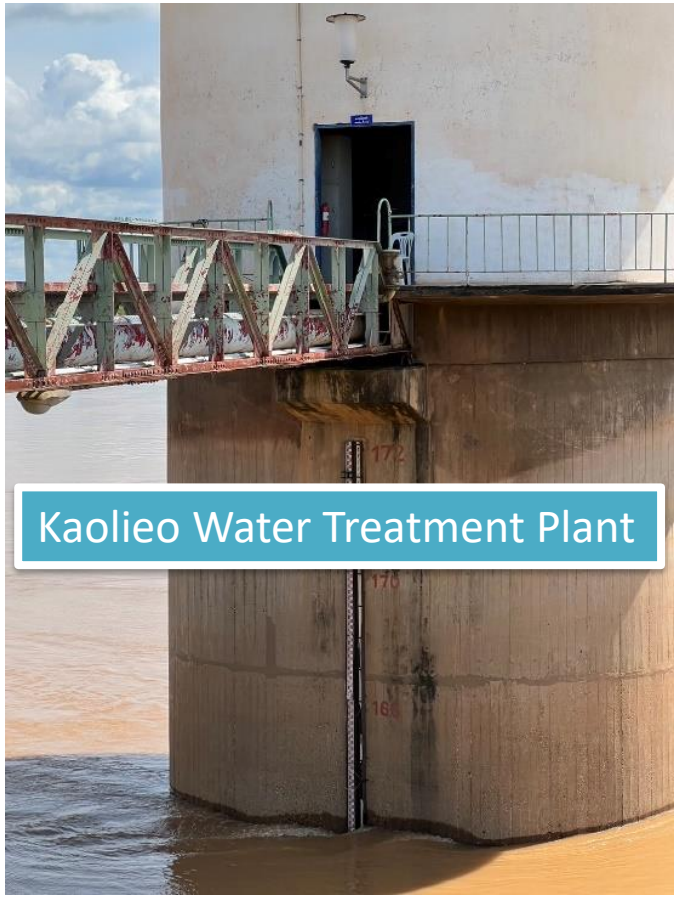
- Kick-off Meeting (17 June 2022)
- Meeting and field survey in Lao PDR
- Meeting and field survey in Philippines
- Meeting with local government offices in Chiang Mai, Thailand



Project Activities in Lao PDR (20 – 21 September 2022)

Applications

- Wildfire monitoring
- Water level monitoring



Kaolieo Water Treatment Plant

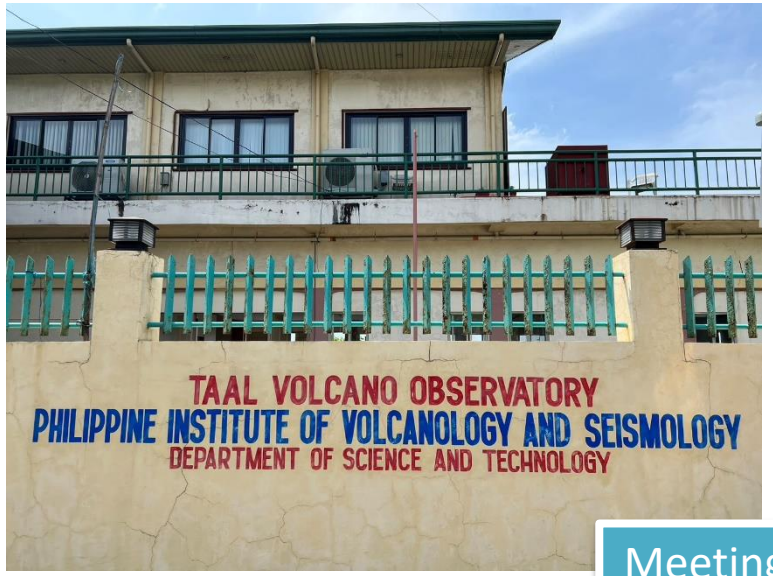
Department of Forestry, NUOL Sang Tong

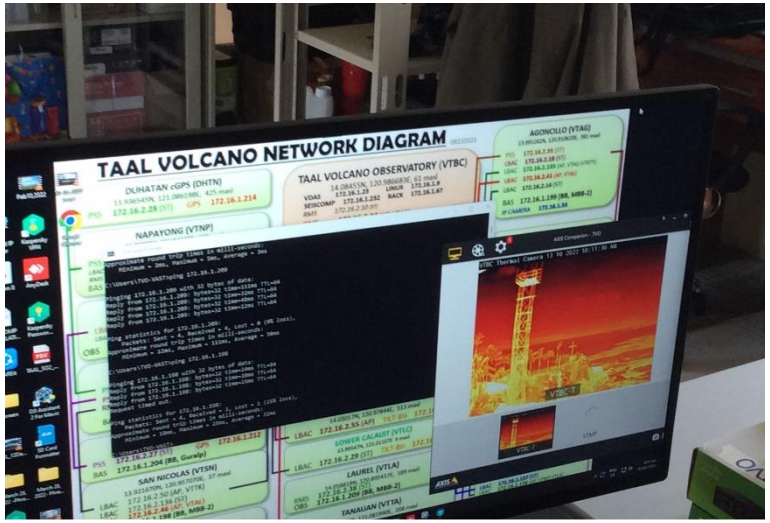
Project Activities in Philippines (12 – 13 October 2022)

Applications

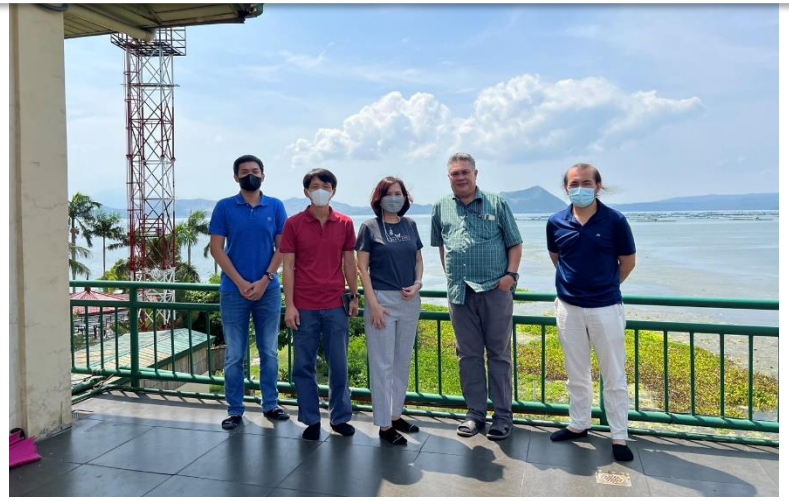
- Water level monitoring
- Air quality monitoring

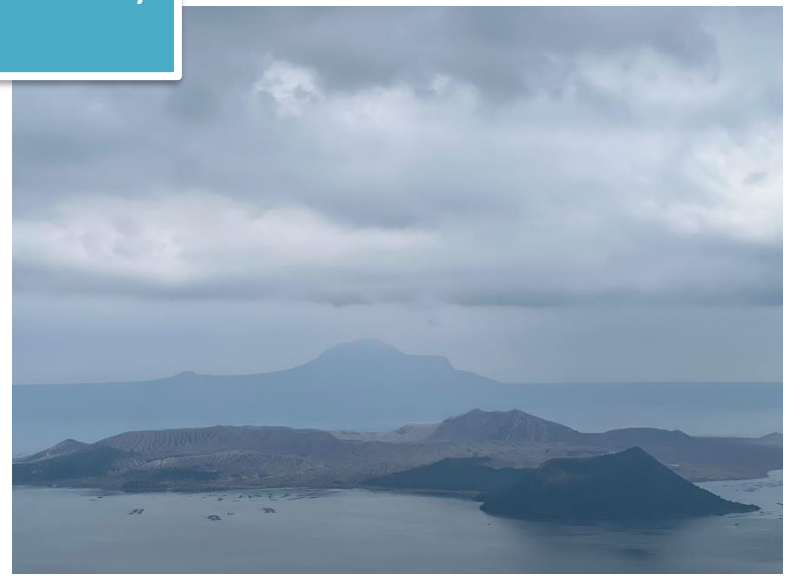
Project Activities in Philippines (12 – 13 October 2022)



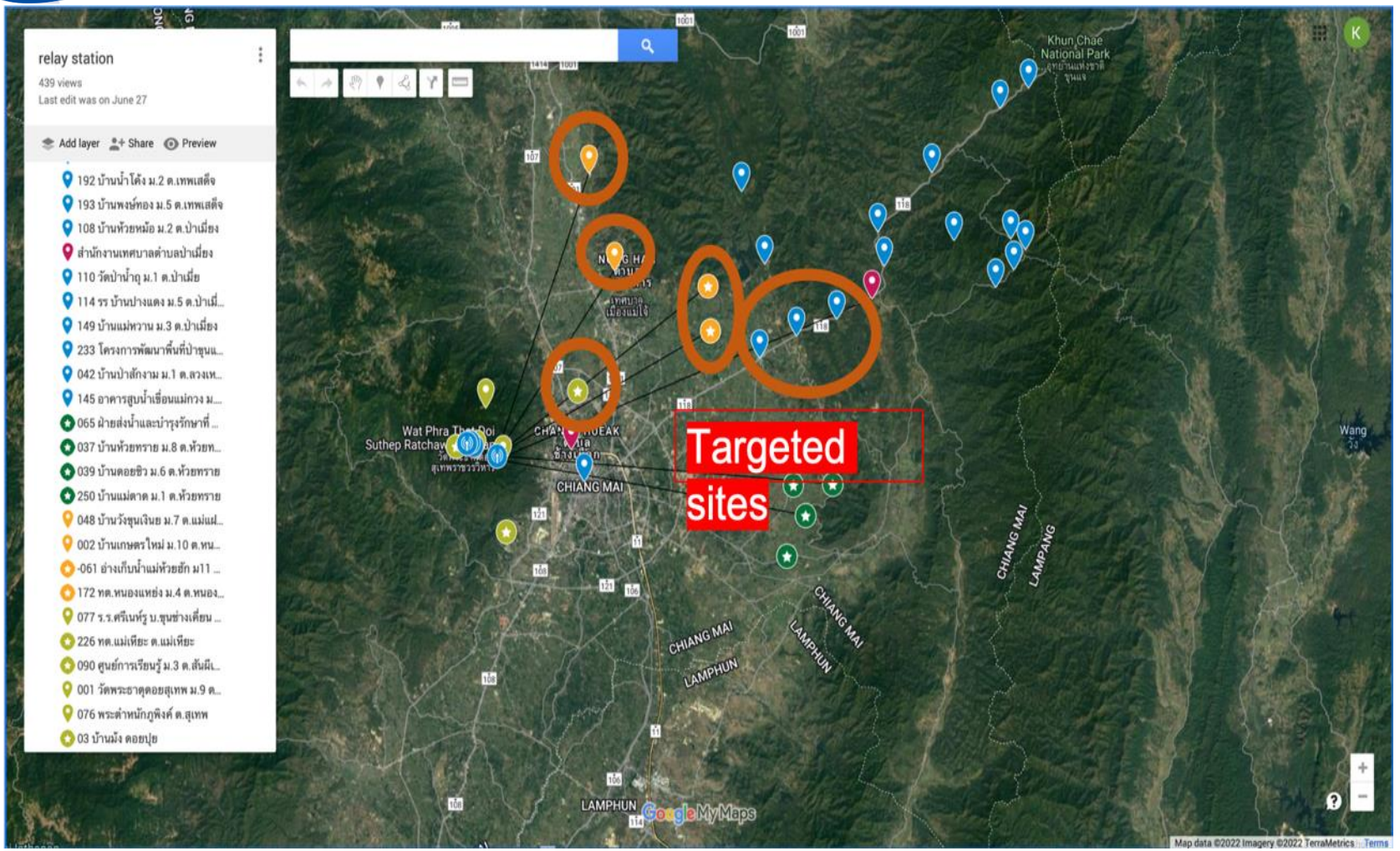


Meeting with PHIVOLCS at the Taal Volcano Observatory
Tagaytay field survey





Project Activities in Thailand (12 – 15 October 2022)



Meeting with local government offices

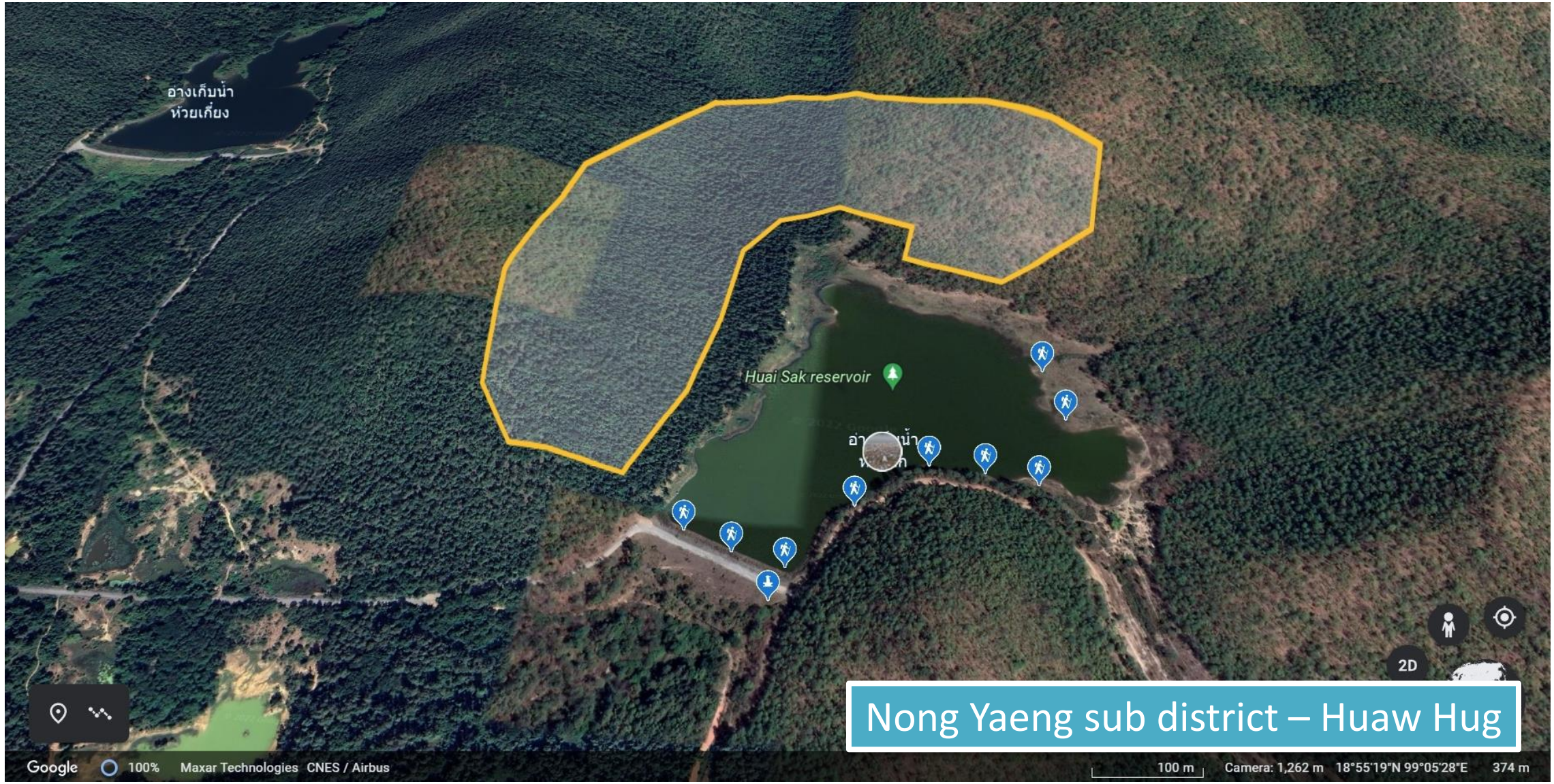
Project Activities in Thailand (12 – 15 October 2022)

Site survey and preliminary data collection

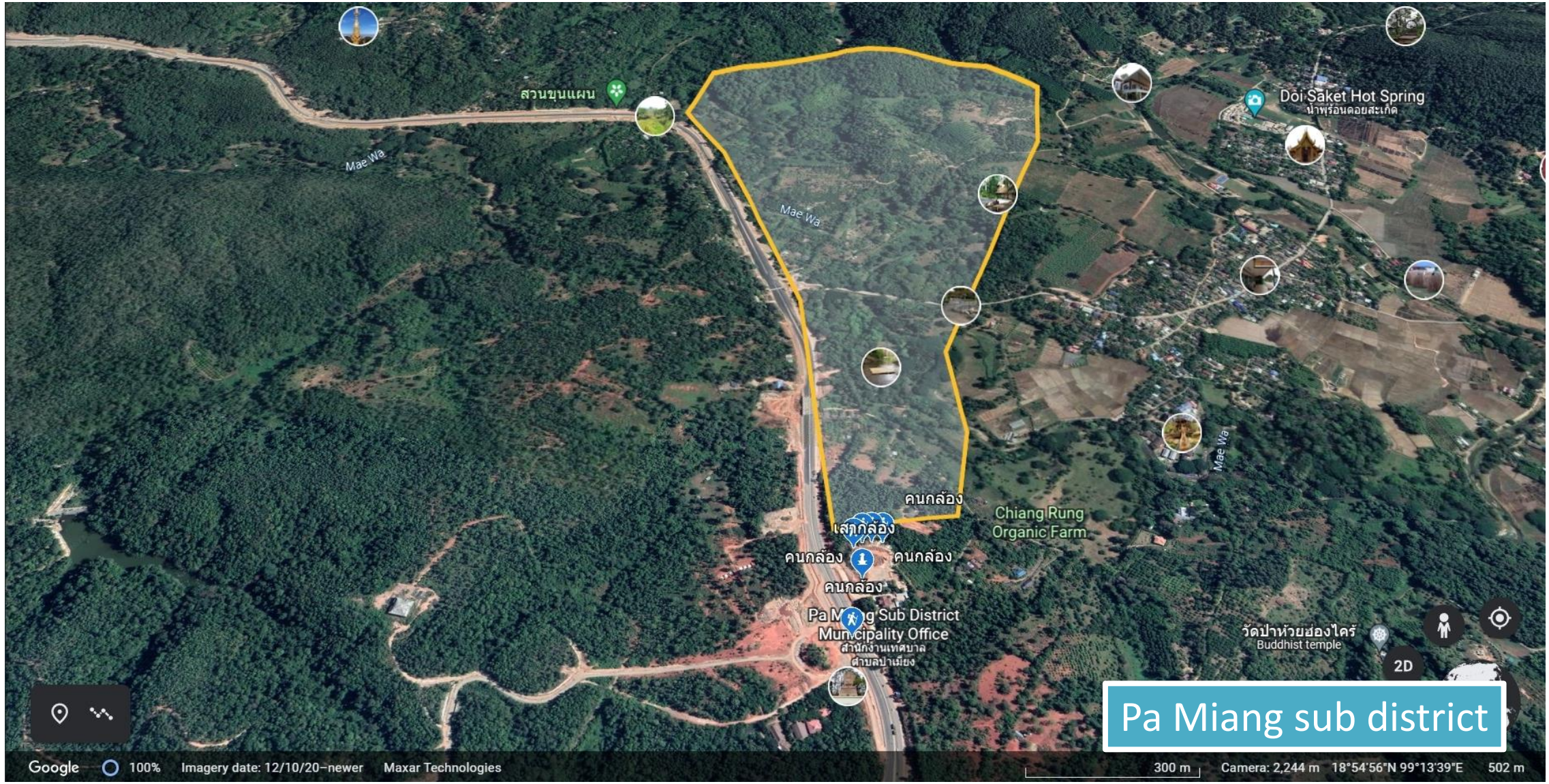
Project Activities in Thailand

Project Activities in Thailand

Project Activities in Thailand



Project Activities in Thailand



Pa Miang sub district

Societal Impact

- A direct social impact of this project has two folds. The first one is a practical surveillant system for environment protection and disaster prevention in wide area utilized by local government agencies in order to minimize the damage that may occur both to health and property. For the second fold, the visual IoT and LPWAN platform could be applied in other domains, such as smart mobility, smart agriculture, and smart tourism.

Conclusion

Activities that have been done so far in 2022 are summarized as follows.

- **Meetings and surveys**: 3 meetings, 3 sites
  - Thailand, Lao PDR, Philippines

Plan

	2022		2023												2024		
	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR
Dataset development, Data collection	■	■															
Visual IoT Workshop in Japan		■	■														
System design		■	■														
Purchase			■	■	■												
Assembly, Implementation				■	■	■											
Installation					■	■	■										
Testing							■	■	■	■	■	■	■	■	■	■	■