ASEAN IVO Members

Total: 75

As of May 2022

Country	Organization	Abbreviation
Brunei	Universiti Brunei Darussalam	UBD
	Universiti Teknologi Brunei	UTB
Indonesia	Agency For The Assessment And Application Of Technology	BPPT
	Ministry of Communications and Information Technology	MCIT
	Telkom University	Tel-U
	Indonesian Institute of Sciences	LIPI
	Institute Technology Bandung	ITB
	Universitas Syiah Kuala	Unsyiah
	Universitas Muhammadiyah Yogyakarta	UMY
	Krida Wacana Christian University	KWCU
	Monash University, Indonesia	MUI
Cambodia	National Institute of Posts, Telecommunications and Information and Communications Technology	NIPTICT
	Institute of Technology of Cambodia	ITC
Laos	Faculty of Engineering, National University of Laos	NUOL
	Technology, Computer and Electronic Institute, Ministry of Science and Technology	TCEI
Myanmar	University of Computer Studies, Yangon	UCSY
	University of Computer Studies, Mandalay	UCSM
	Computer University (Thaton)	Thaton
	Yangon Technological University	YTU
	Mandalay Technological University	MTU
	University of Technology (Yatanarpon Cyber City)	UTYCC
	University of Information Technology	UIT
Malaysia	MIMOS Berhad	MIMOS
	Universiti Teknologi Malaysia	UTM
	Universiti Putra Malaysia	UPM
	Universiti Sains Malaysia	USM
	Universiti Tunku Abdul Rahman	UTAR
	Multimedia University	MMU
	Universiti Malaysia Perlis	UniMAP
	University of Malaya	UM
	Universiti Tun Hussein Onn Malaysia	UTHM
	Universiti Teknologi PETRONAS	UTP
	Swinburne University of Technology Sarawak Campus	SUTS
	Curtin University	CUU
	Universiti Malaysia Pahang	UMP
	Universiti Kebangsaan Malaysia	UKM
	Universiti Malaysia Sarawak	UNIMAS
	Universiti Malaysia Kelantan	UMK
Philippines	Mapua University	MU
	Polytechnic University of the Philippines	PUP
	Advanced Science and Technology Institute, Department of Science and Technology	DOST-ASTI
	University of the Philippines, Diliman	UPD
	Central Luzon State University	CLSU
Singapore	Institute for Infocomm Research	I2R
	School of Humanities and Social Sciences, Nanyang Technological University	NTU
	Faculty of Engineering, National University of Singapore	NUS
	Singapore Advanced Research and Education Network	SINGAREN
	Singapore University of Technology and Design	SUTD
	University of Glasgow Singapore	UGS

Country	Organization	Abbreviation
Thailand	Chiang Mai University	CMU
	Chulalongkorn University	CU
	King Mongkut's Institute of Technology Ladkrabang	KMITL
	National Electronics and Computer Technology Center	NECTEC
	National Institute of Metrology	NIMT
	Thai-Nichi Institute of Technology	TNI
	Office of Information Technology Administration for Education Development, Commission on Higher Education	UniNet
	King Mongkut's University of Technology Thonburi	KMUTT
	Thailand Institute of Scientific and Technological Research	TISTR
	Prince of Songkla University	PSU
	Asian Institute of Technology	AIT
Vietnam	Hanoi University of Science and Technology	HUST
	Vietnamese Academy of Science and Technology, Institute of Information Technology	IOIT
	Posts and Telecommunications Institute of Technology	PTIT
	Vietnam National University, International Francophone Institute	VNU-IFI
	Vietnam National University, Information Technology Institute	VNU-ITI
	Vietnam National University, University of Engineering & Technology	VNU-UET
	The University of Danang, Danang University of Science and Technology	DUT
	Vietnam National University – Ho Chi Minh City, University of Information Technology	UIT-HCM
	Le Quy Don Technical University	LQDTU
	Nha Trang University	NTU
	VNU University of Science	VNU-HUS
	Saigon University	SGU
Japan	National Institute of Information and Communications Technology	NICT
	NEC Solution Innovator	NES
	Tokyo University	TU

Steering Committee Members

As of May 2022

Country	Organization	Name	Title
Brunei	UBD	Dr. Haji Abdul Ghani bin Haji Naim	Assistant Professor, Faculty of Science and Director, Institute of Applied Data Analytics
	UTB	Assoc. Prof. Dr. Somnuk Phon-Amnuaisuk	Director, Centre for Innovative Engineering at UTB
Cambodia	NIPTICT	Dr. Sam Sethserey	Vice President
Indonesia	MCIT	Mrs. Woroindah Widiastuti	Senior Technology Advisor
	Tel-U	Ir. MSc. PhD. Ashwin Sasongko SASTROSUBROTO	Chairman of Telkom University Research Center for ICT Public and Business Policy
Laos	NUOL	Dr. Somphone Kanthavong	Vice Dean, Faculty of Engineering
Malaysia	MIMOS	Dr. Choong Khong Neng	Principal Researcher
	UTM	Prof. Ir. Dr. Abu Sahmah Bin Mohd Supa'at	Dean of Research, Innovative Engineering Research Alliance
Myanmar	UCSY	Prof. Dr. Myint Myint Sein (Ms.)	Pro-Rector
Philippines	MU	Prof. Alejandro Ballado	Dean, School of Electrical, Electronics and Computer Engineering
	DOST-ASTI	Franz A. de Leon, Ph.D.	Director IV
Singapore	I2R	Dr. Lye Kin Mun	Executive Director
	NUS	Prof. Aaron Thean	Dean of Faculty of Engineering
Thailand	CU	Dr. Widhyakorn Asdornwised	Assistant Professor, Department of Electrical Engineering
	NECTEC	Dr. Chai Wutiwiwatchai	Executive Director
Vietnam	PTIT	Assoc. Prof. Dr. Habil., Dr.-Ing. HOANG Dang Hai	Vice President
	VNU-UET	Prof. NGUYEN Thanh Thuy	Professor, Director of AI Key Lab
Japan	NICT	Dr. Hiroyuki Yano *	Vice President

*Steering Committee Chair

ASEAN IVO 2021 Projects

Project leader indicated in bold

1 Visual IoT Network for Environment Protection and Disaster Prevention

Topic: ICT for Environment Protection and Disaster Prevention

Members: **NECTEC(THA)**, NICT(JPN), MU(PHL), UCSY(MMR), NUOL(LAO), Doi Suthep-Pui national park(THA), Pa Miang sub-district municipality(THA), Chedi Mae Krua sub-district municipality(THA), CMU(THA), KMITL(THA)

The air pollution problem due to PM2.5 and PM10 is still a main issue for ASEAN countries that must be solved sustainably. One of the leading causes of air pollution is forest fires. About 92% of burned areas in Chiang Mai are in the conservation forest and national park. Furthermore, with the problem of high, steep, mountainous terrain in conservation areas and national parks and insufficient patrol staff, it is very difficult to swiftly do effective monitoring and firefighting. Speed in evaluating, announcing, and distributing news about the situation in the event of a forest fire has a great effect on reducing or preventing damage that may occur both to life and property in the area of the disaster. Using Visual IoT in the forest fire monitoring system will increase the ability to accurately assess and provide information about the situation quickly. In this project, Visual IoT will be used in conjunction with other sensors such as satellite image in order to assess forest fires.

2 Agricultural IoT based on Edge Computing

Topic: ICT for Food

Members: **PTIT(VNM)**, VNU-UET(VNM), NICT(JPN), NECTEC(THA), UTM(MYS)

This project aims to build an agricultural IoT framework based on edge computing, with a focus on solving existing challenges for agricultural IoT systems for both academic and practical aspects at the network edge. Research findings on improving edge computing performance, system security, and advanced intelligent computing will be applied and tested on farms across the participating countries. As an outcome, the exchange of experiences and data sharing among research institutions, as well as the collected data, will serve as a foundation for continuing to develop a common and effective model/framework for countries to apply to agricultural IoT applications in practice.

3 P2EI-WEALTH (Physiological and Psychological Edge Intelligence WEArable LoRa HealTH) System for Remote Indigenous Community and Disaster Recovery Operations

Topic: ICT for Health and Welfare

Members: **UKM(MYS)**, GTek Enterprise(PHL), MU(PHL)

In the era of IoT and beyond, the urban and suburban population health monitoring is transitioning to use of wearables and intelligent health support systems. Unfortunately, indigenous people and search and rescue operators, who are often in remote and dangerous areas, cannot benefit from the advantages due to limited connectivity, often caused by the lack of infrastructure. Furthermore, current wearables have only provided physiological measurements but not psychological, which is a growing concern worldwide. In this project, a novel integrated IoT wrist-wearable with physiological and psychological biosensors are proposed with complementary activity, environmental, and position sensors to provide alerts and localization data relevant to the indigenous people and disaster recovery operations. The system will be empowered by edge intelligence and wireless LoRa-link to an in-vehicle or stationary data center. With this solution, the medic or emergency medical service (EMS) personnel will be able to know the real-time conditions and able to decide on any intervention.

4 AI-Based Real Time Analysis and Control of the Monitoring on the Growth of Freshwater Prawn Using Video Image Processing from Underwater Drone

Topic: ICT for Food

Members: **UTB(BRN)**, UTM(MYS), Telcom-U(IDN), BRIN(IDN), O.D.E aquaculture and agriculture Co(BRN), MPRT(BRN), UY(UK)

To address food security, the number of aquaculture activities for offshore and onshore fish and prawn farming have increased significantly. However, the production rate from small-medium enterprises has been low, especially for onshore prawn aquaculture. In this interdisciplinary project, an AI based recognition system is proposed to monitor the growth of Macrobrachium Rosenbergii, using video images and sensors data taken from production aquaculture ponds with different water qualities. Various image processing and deep learning techniques will be applied to evaluate the performance of the algorithms under different image quality with different water turbidity. Sensors will be placed in the pond to capture the breeding environment and used together with the growth profile to construct the aquaculture database to be shared with other ASEAN countries.

5 An IoT-based Data Collection and Analytics Framework using Bluetooth Proximity Beacons

Topic: ICT for a Secure and Smart Community

Members: **UTM(MYS)**, UGS(SNG), UTB(BRN), UB(IDN), USM(MYS), UTAR(MYS)

This project proposes an innovative IoT solution to track the location of buses to collect transportation data without requiring the deployment of GPS devices. It uses Bluetooth Low Energy (BLE) proximity beacon to track the journey of a bus by deploying an Estimote proximity beacon on the bus. BLE detection devices are installed at selected bus stops along the bus route to detect the arrival of buses. Once detected, the location of the bus is submitted to a cloud server to compute the bus ETAs and perform analytics. With the data collected, the project will build deep-learning models to learn about the journey duration during peak and non-peak period. With an accurate predictive model and fleet monitoring dashboard, this will enable the municipal councils to monitor traffic flow and predict congestions in the future.

Figures for Active Projects (2018-2022)

Start date (Fiscal Year)		Project Title	Duration (years)	Countries	Members	Researchers
2022	1	Visual IoT Network for Environment Protection and Disaster Prevention	2	5	10	21
	2	Agricultural IoT based on Edge Computing	2	4	5	20
	3	P2EI-WEALTH (Physiological and Psychological Edge Intelligence WEArable LoRa HealTH) System for Remote Indigenous Community and Disaster Recovery Operations	1.5	2	3	7
	4	AI-Based Real Time Analysis and Control of the Monitoring on the Growth of Freshwater Prawn Using Video Image Processing from Underwater Drone	1	4	7	9
	5	AI-Based Real Time Analysis and Control of the Monitoring on the Growth of Freshwater Prawn Using Video Image Processing from Underwater Dron	2	4	6	23
		Subtotal			**31**	**80**
2021	1	2.5D Technology-based Integrated Antenna Array mm-Wave System For Non-Invasive Food Safety Scanner (TIAS)	2	6	9	15
	2	Resilient Artificial Intelligence of Things (AIoT) Green Energy System with Real-time Solution for Effective Aquaculture (REAS-SEA)	2	6	10	22
	3	IoT System for Water Reuse in Developing Cities	2	4	4	8
	4	GNSS and Ionospheric Data Products for Disaster Prevention and Aviation in Magnetic Low-Latitude Regions (Phase II)	2	5	7	21
	5	VOIS for Hearing-Impaired Children	2	3	3	10
		Subtotal			**33**	**76**
2020	1	Context-Aware Disaster Mitigation using Mobile Edge Computing and Wireless Mesh Network	3	4	5	18
	3	ASEAN-Wide Cyber-Security Research Testbed	3	5	6	13
		Subtotal			**11**	**31**
2018	2	Cyber-Attack Detection and Information Security for Industry 4.0	3	3	3	11
		Subtotal			**3**	**11**

Total members: 232
Total researchers: 466

Figures for Completed Projects (2016-2020)

Start date (Fiscal Year)		Project Title	Duration (years)	Countries	Members	Researchers
2020	2	Reusable, Sharable, and Transferable Smart Data Platform for Collaborative Development of Data-driven Smart Cities	2	5	5	12
	4	An Energy Efficient, Self-Sustainable, and Long Range IoT System for Drought Monitoring and Early Warning	1.8	4	9	14
		Subtotal			**14**	**26**
2019	1	Relay Station Network Based on Low-power Wide-area Network (LPWAN) Technologies for Disaster Management	3	6	9	23
	2	FarmTab: Precision Agriculture System using Internet of Things and Artificial Intelligence for Urban Farming	2	4	6	8
	3	Prevention of 4 Disasters and Their Single Recovery Networks based on Internet-of-Things with Airborne Capability (PATRIOT-41R-Net)	3	5	5	6
	4	GNSS and Ionospheric Data Products for Disaster Prevention and Aviation in Magnetic Low-Latitude Regions	2	4	6	9
		Subtotal			**32**	**55**
2018	1	Event Analysis: Applications of computer vision and AI in smart tourism industry	2	7	8	8
	3	Scalable Distributed IoT Framework based on Mobile Robot Technology for High Performance Greenhouse Plants	2.5	3	4	6
	4	Smart Aquaculture Quality Monitoring (AQM) System with Internet of Things (IoT)	2	4	7	7
	5	NAPC: Networked ASEAN Peat Swamp Forest Communities	2	5	7	15
	6	A mesh-topological, low-power wireless network platform for a smart watering system	2	5	6	20
		Subtotal			**31**	**56**
2017	1	A Hybrid Security Framework for IoT Networks	2	4	6	9
	2	Smart Lighting for Internet of Things and Smart Homes	3	3	6	9
	3	IoT System for Public Health and Safety Monitoring with Ubiquitous Location Tracking	2	4	5	12
	4	Evapotranspiration (ET)-Based Irrigation System with Internet of Things (IoT) Integration for Smart Farming Application Addressing the ASEAN Impending Water Crisis	3	4	5	9
	5	Study and evaluation of heterogeneous network for smart community and smart city applications	2	3	4	10
		Subtotal			**26**	**49**
2016	1	Open Collaboration for Developing and Using Asian Language Treebank	3	6	6	14
	2	ASEAN Language Speech Translation thru' U-STAR	3	7	8	17
	3	Mobile IoT	2	4	4	6
	4	ASEAN forum for Software Defined System on Disaster Mitigation and Smart Cities	3	7	10	12
	5	IoT Open Innovation Platform	3	4	5	6
	6	Cambodia NerveNet Field Testing	3	3	3	6
	7	TV White Space (TVWS) Experimental for Application in Remote Area	2	3	4	8
	8	Research and development on short distance communication and imaging for applications in ASEAN region	3	5	11	13
		Subtotal			**51**	**82**