

ASEAN IVO Members

Total: 68

As of April 2021

Country	Organization	Abbreviation
Brunei	Universiti Brunei Darussalam	UBD
	Universiti Teknologi Brunei	UTB
	Agency For The Assessment And Application Of Technology	BPPT
	Ministry of Communications and Information Technology	MCIT
Indonesia	Telkom University	Tel-U
	Indonesian Institute of Sciences	LIPI
	Institute Technology Bandung	ITB
	Universitas Syiah Kuala	Unsyiah
	Universitas Muhammadiyah Yogyakarta	UMY
Cambodia	Krida Wacana Christian University	KWCU
	National Institute of Posts, Telecommunications and Information and Communications Technology	NIPTICT
Laos	Institute of Technology of Cambodia	ITC
	Faculty of Engineering, National University of Laos	NUOL
Myanmar	Technology, Computer and Electronic Institute, Ministry of Science and Technology	TCEI
	University of Computer Studies, Yangon	UCSY
	University of Computer Studies, Mandalay	UCSM
	Computer University (Thaton)	Thaton
	Yangon Technological University	YTU
Malaysia	Mandalay Technological University	MTU
	University of Technology (Yatanarpon Cyber City)	UTYCC
	University of Information Technology	UIT
	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
Philippines	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
	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
Singapore	Central Luzon State University	CLSU
	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
Japan	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
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
Japan	National Institute of Information and Communications Technology	NICT
	NEC Solution Innovator	NES
	Tokyo University	TU

Steering Committee Members

As of April 2021

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. Woroidah 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	Assoc. Prof. Dr. Khamphoui Southisombath	Acting Dean, Faculty of Engineering
Malaysia	MIMOS	Mr. Boon Choong Foo	Senior Director, Wireless Innovation
	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	Dr. Joel Joseph S. Marciano Jr.	Acting 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 Wutiw WATCHAI	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

Figures for Completed Projects (2016-2019)

Start date (Fiscal Year)	Project Title	Duration (Years)	Countries	Members	Researchers
2019	4 GNS and Ionospheric Data Products for Disaster Prevention and Aviation in Magnetic Low-Latitude Regions	2	4	6	9
	Total			6	9
2018	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
	Total			11	13
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
	Total			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
Total			51	82	

Figures for Active Projects (2018-2020)

Start date (Fiscal Year)	Project Title	Duration (years)	Countries	Members	Researchers
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	7
	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
	Total			33	75
2020	1 Context-Aware Disaster Mitigation using Mobile Edge Computing and Wireless Mesh Network	2	4	5	12
	2 Reusable, Sharable, and Transferable Smart Data Platform for Collaborative Development of Data-driven Smart Cities	2	5	5	12
	3 ASEAN-Wide Cyber-Security Research Testbed	2	5	6	6
	4 An Energy Efficient, Self-Sustainable, and Long Range IoT System for Drought Monitoring and Early Warning	1.8	4	9	14
	Total			25	44
2019	1 Relay Station Network Based on Low-power Wide-area Network (LPWAN) Technologies for Disaster Management	2	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)	2	5	5	6
	Total			26	46
2018	1 Event Analysis: Applications of computer vision and AI in smart tourism industry	2	7	8	8
	2 Cyber-Attack Detection and Information Security for Industry 4.0	3	3	3	6
	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
	Total			24	49

ASEAN IVO 2021 Projects

Project leader indicated in bold

- ## 2.5D Technology-based Integrated Antenna Array mm-Wave System For Non-Invasive Food Safety Scanner (TIAS)

Topic: ICT for Food

Members: **TokyoU (JPN)**, NTU (VNM), UBD (BRN), NUS (SGP), PTIT (VNM), IICT (LAO) SOICTEC (SGP), NIPTICT (KHM), WasedaU (JPN)

Food safety is not only essential for human health but also plays an important role in the development of national economies, trade, and tourism. This project will do research for developing a unique and novel portable and cost-effective scanner for real-time detection of contaminants in staple foods and/or animal feeds using non-invasive mm-Wave sensing with on-chip antenna-array system. I will be built based on a chiplet-architecture, by mixing different technologies into a single chip for RF transceivers. These chiplets will be integrated into a 2.5D package, together with a smart mm-Wave antenna array. Such a proposed modular mix-and-match 2.5D system with chiplet design will not only provide the merits of power, performance, area and cost, but also make it straightforward for further upgrading and improvement in the future.
- ## Resilient Artificial Intelligence of Things (AIoT) Green Energy System with Real-time Solution for Effective Aquaculture (REAS-SEA)

Topic: ICT related Technologies and Applications

Members: **PTIT (VNM)**, TokyoU (JPN), SOITEC (SGP), NTU (VNM), IICT (LAO), MICV (VNM), MMU (MYS) BLU (VNM), LEO (JPN), NIPTICT (KHM)

To support ASEAN regions' fast growth aquaculture industry with a real-time and holistic control solution, this project employs a combination of advanced sensors, AIoT, and hybrid energy harvesting to connect and collect multiple environmental and biological sensing parameters. Collected data will be used to build an Artificial Intelligence (AI) model based on multivariate environmental and biological sensing parameters to provide a real-time, holistic and autonomous control solution for aquaculture farmers to reduce high shrimp mortality rate and to improve their farm economics. This IoT system features auto-feeding control helping farmers optimize their feeding pattern for growth, controlling dissolved oxygen, chemical and antibiotic use, reducing water pollution and mortality rate and feed cost.
- ## IoT System for Water Reuse in Developing Cities

Topic: ICT for Secure and Smart Community

Members: **USM (MYS)**, UBD (BRN), TDTU (VNM), NICT (JPN)

Due to limited water resources, increasing urban water demand and climate change, many urban water systems are facing ever-increasing pressure in supplying potable water. This pressure can be further increased by the lack of sustainable water management. Also, urban areas are vulnerable to any short-term environmental shocks and long-term environmental change, due to limited water resources. Water reuse appears to be the only solution, but many water reuse projects failed in the past, due to insufficient monitoring and maintenance. Hence, we propose pairing with ICT technologies, which allow the real-time analysis and monitoring of water quality to preserve the water reuse system and the safety of vulnerable citizens. Moreover, data can be collected through IoT to improve water management in cities. The major aim of this project is to design and develop a system which can perform wastewater treatment, water quality analysis and monitoring, as well as critical water reuse data collection to improve household water use and conservation.
- ## GNSS and Ionospheric Data Products for Disaster Prevention and Aviation in Magnetic Low-Latitude Regions (Phase II)

Topic: ICT for Environment Protection and Disaster Prevention

Members: **KMITL (THA)**, CMU (THA), GISTDA (THA), NUL (LAO), YTU (MMR), NIPTICT (KHM), NICT (JPN)

This project is a continuation of ASEAN IVO project 2019-4. The aim is to expand ionospheric observational infrastructure further in Cambodia and perform data analysis from multi-sensor sources including GNSS receivers, ionosonde, magnetometer and VHF radar station located at the magnetic equator and low-latitude regions. A new GNSS station is to be installed at National Institute of Posts, Telecoms & ICT (NIPTICT) at Phnom Penh, Cambodia to expand the network of GNSS stations under South East Asia Low-latitude Ionospheric Network (SEALION) project. Importantly, this project aims to establish a GNSS and Space Weather Excellence Center at KMITL, Thailand to provide the data from our observation networks and the knowledge and research information on GNSS, ionosphere and space weather effects through various media and channels such as seminars, trainings, online materials etc. to academic institutes and industries in Thailand and the neighboring ASEAN countries.
- ## VOIS for Hearing-Impaired Children

Topic: ICT related Technologies and Applications

Members: **UCSM (MMR)**, NECTEC (THA), USM (MYS)

Hearing-impaired children's education is challenging because they are unlikely to develop normal speech and language ability. Although hearing aids and Cochlear Implants (CI) may help the child hear, they do not restore normal hearing and speech therapy is somewhat dull and repetitive for a child. To solve the above problems and challenges, we will develop a mobile application VOIS, which is the first speech therapy application for hearing impaired children in ASEAN countries. We intend to use this mobile app for Myanmar, Thai, and Malay languages firstly and expand to languages for other ASEAN countries. This mobile app applies Convolutional Neural Network (CNN) based speech recognition system.