IEEE SEACAS Hackathon 2022

December 3-4, 2022

Hanoi, Vietnam

Outline

❑ Challenges of the Hackathon

❑ VNU's Hoa Lac campus

❑ Objectives

❑ Hackathon schedule

Challenges of the Hackathon

- The challenge is to create technology solutions aligned with circuits and systems to build a SMART Campus environment

- Technology solutions can be in the forms of Data analytics & AI, Mobile Apps, IoT, Wearable devices and robotics…

- Solutions can be implemented in software and/or hardware
  - ESP32 board and sensors and actuators are provided by SEACAS

- The aim is to build a comfortable, convenient, sustainable campus environment for VNU new campus at Hoa Lac
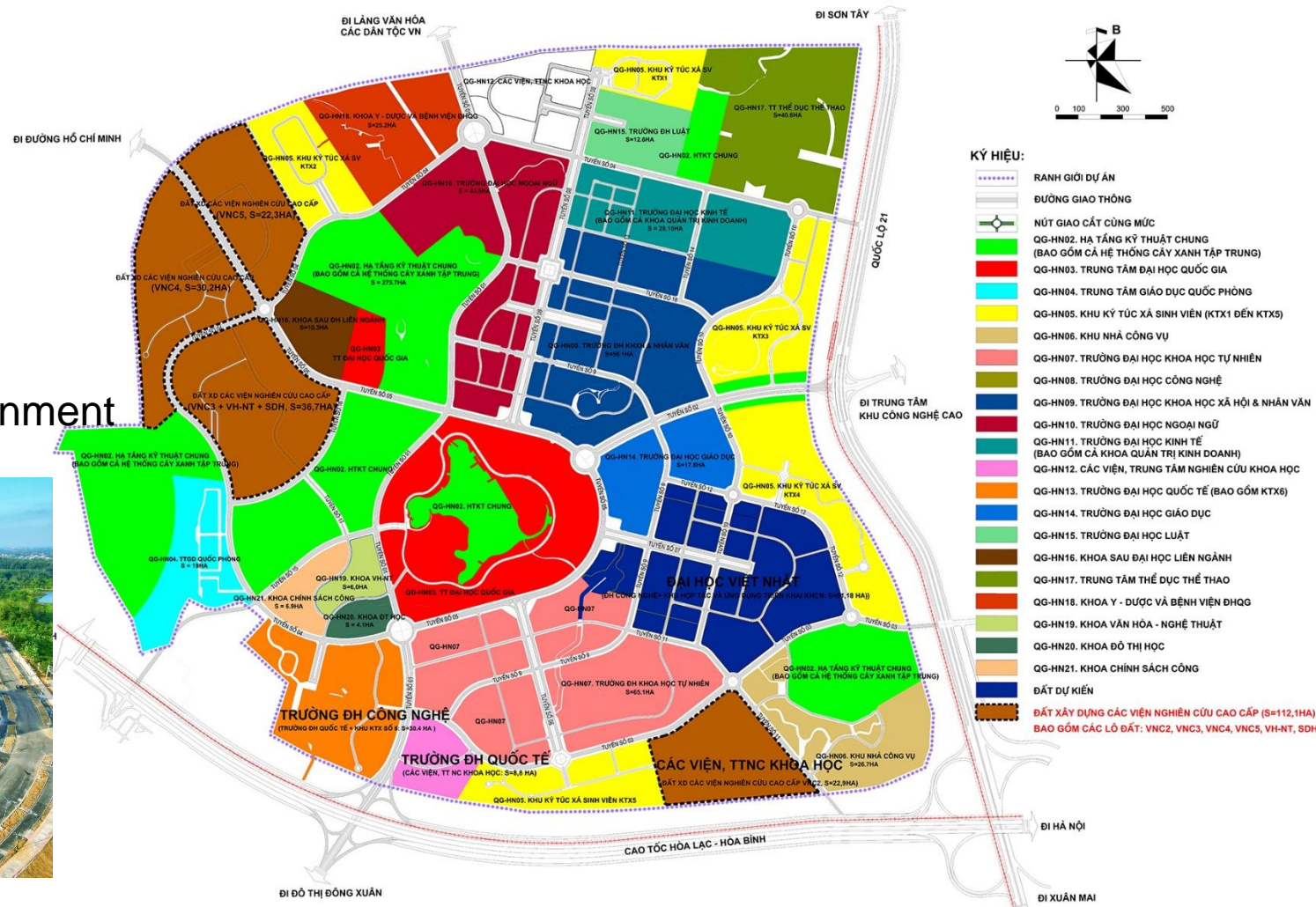
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VNU's Hoa Lac Campus

Area: 11.37 km^2
Subprojects: 21
- ❏ Lecture halls
- ❏ Research centers
- ❏ Administration
- ❏ Dormitories
- ❏ Stadium
- ❏ Roads & green environment

VNU's willingness: a smart campus with an area equivalent to Cau Giay District

ĐẠI HỌC KHOA HỌC XÃ HỘI & NHÂN VĂN   ĐẠI HỌC NGOẠI NGỮ   ĐẠI HỌC KINH TẾ   ĐẠI HỌC CÔNG NGHỆ   ĐẠI HỌC KHOA HỌC TỰ NHIÊN

❑ Challenges of the Hackathon

❑ VNU's Hoa Lac campus

❑ **Objectives**

❑ Hackathon schedule

Objectives

- Design and prototype of an autonomous system for VNU's

  Smart & Green Campus related to:

  – Transportations (internal transportations)

  – Resource management (energy, water, training & research facilities, etc.)

  – Incidents

  – Security & safety

  – Comfortable services for lecturers & students

  – *Your own ideas*

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Hackathon schedules

- 3 December 2022: Kickstart Meeting

  - Contest announcement

  - Team works

- 4 Feb 2020: Presentation & evaluation

  - Morning: team works

  - Afternoon (14:30-17:00):

    - 15 minutes for presentation

    - 5 minutes for Q&A

Merit

- Relevance to Circuits & Systems

- Originality

- Technical strength

- Presentation

- Bill of Material cost

- 1st prize:

- 2nd prize:

- 3rd prize:

- Fighting spirit:

Team list

Name	CAS Chapter	Team ID
SIVARUBINI MACELAMANY	Malaysia	1
Nguyen Huy Hoang	Vietnam	1
Nur Mutmainnah Rahim	Indonesia	1
NUR AMNI BINTI ZULFIKRI	Malaysia	2
Dinh Quang Lam	Vietnam	2
Kraiwich Satrapiphop	Thailand	2
NURUL SYAFIQAH BT ISMAIL	Malaysia	3
Phạm Hoàng Long	Vietnam	3
Cheng Junjian	Singapore	3
AINUL NAJIHAH BINTI ABD HALIM	Malaysia	4
Đào Quốc Hưng	Vietnam	4
Chawin	Thailand	4
Baejah	Indonesia	5
Phạm Văn Phương	Vietnam	5
Preeyapon Srathongmon	Thailand	5
Nguyen Khac Long	Vietnam	6
Marcus Joseph L. Reyes	Philippines	6
WIPHOOTHORN SANGANGAM	Thailand	6
Lawrence Roman A. Quizon	Philippines	7
Chong Yi Sheng	Singapore	7

HW List

- Microcontroller: ESP32-C3 (WIFI + BLE)
- Sensors:
  - 37 sensor kits
  - Fingerprint
  - Gesture
  - Air Particles: PM2.5
  - Water: TDS, temperature
- Communication:
  - Wifi & Bluetooth (in ESP32-C3)
  - LoRa SX1278 module
- Actuators
  - Step, DC motor
  - Encoder
- Peripherals:
  - Keypad
  - Antenna
  - Cables
  - Breadboard
  - Screen: LED display, TFT TouchScreen

Datasheet, documents example code

- URL: https://bit.ly/3Fkfbz1

2.4nch_240X320_9341

7-Segment LED

37-in-1-SENSORS-KIT

DS18b20-water-proof-temperature-sensor

Dust-PM2.5-sensor

Fingerprint-sensor

LoRa-SX1278

basic esp32c3 tutorial.pdf

esp-c3-32s_en.pdf

esp-c3-32s-kit-v1.0_specification.pdf

In-Depth Interface L298N DC Motor Driver Module with Arduino.pdf

L298_H_Bridge.pdf

Servo-master.zip

Volunteers & contact persons

- Contact for HW components: Duc-Manh Tran

- Volunteers:
  – Manh-Hiep Dao

  – Duc-Vu Le