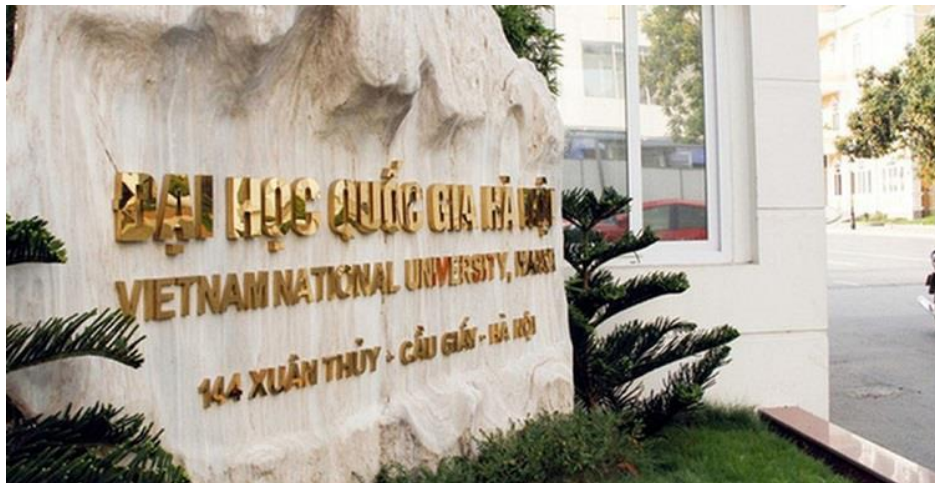
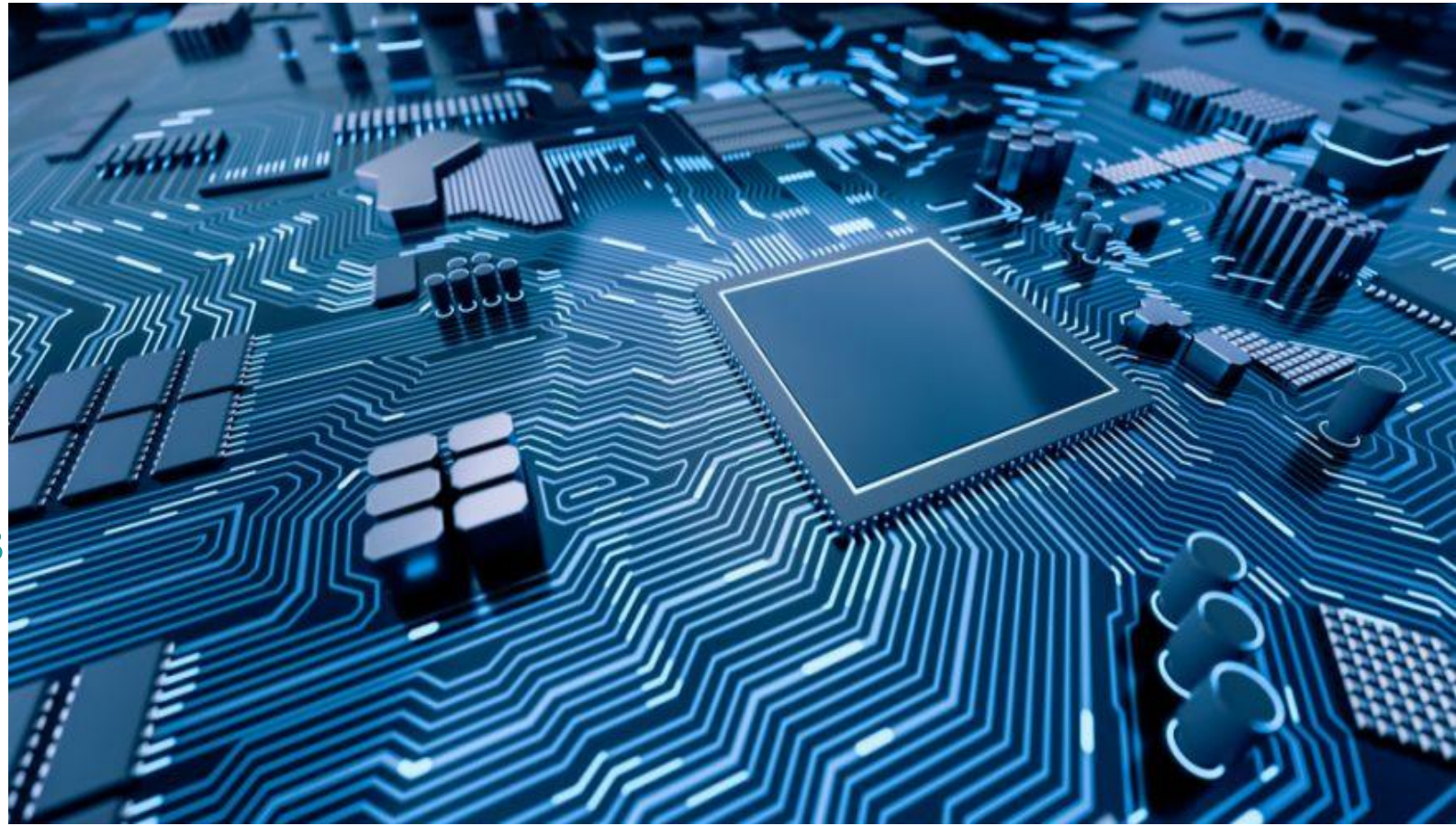




Faculty of

Electronics and Telecommunications



# Internet of Things: Practice

- Lecturer: Dr Nguyen Ngoc Tan
- Email: [nguyen.tan17089@gmail.com](mailto:nguyen.tan17089@gmail.com)



# IOT PLATFORMS



Azure IoT Hub



Oracle IoT Platform

- ❖ What is an IoT Platform?
- ❖ Blynk
- ❖ Suggestion for Mini-Project

# What is an IoT Platform?

## ❖ Definitions

- An IoT Platform is a set of cloud-based services and applications used to monitor, manage and interact with smart, connected devices.
- IoT platforms are the support software that connects everything in an IoT system. An IoT platform facilitates communication, data flow, device management, and the functionality of applications.
- An IoT platform is an on-premises software suite or a cloud service (IoT platform as a service [PaaS]) that monitors and may manage and control various types of endpoints, often via applications business units deploy on the platform.

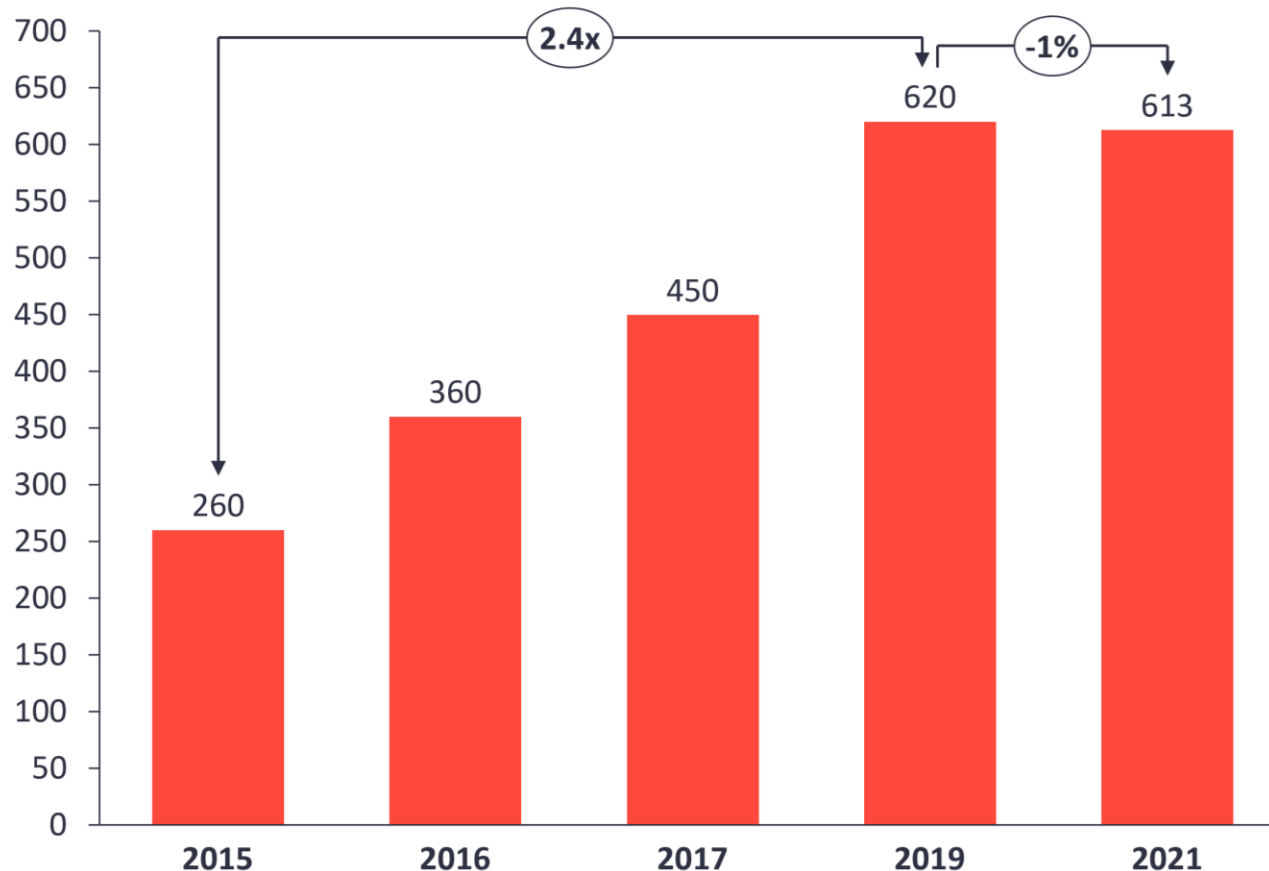
## ❖ IoT platforms help:

- Connect hardware
- Handle different communication protocols
- Provide security and authentication for devices and users
- Collect, visualize, and analyze data
- Integrate with other web services



# Number of publicly known "IoT Platforms" (2015-2021)

Number of publicly known "IoT Platforms" (IoT Analytics Research)



Selection of 40+ IoT Platform providers



# Open IoT Platforms

## ❖ Blynk

### Blynk Tour

✓ Welcome — 2 Platform — 3 Modes — 4 Devices — 5 Template — 6 Template components — 7 Features — 8 Business

#### Platform

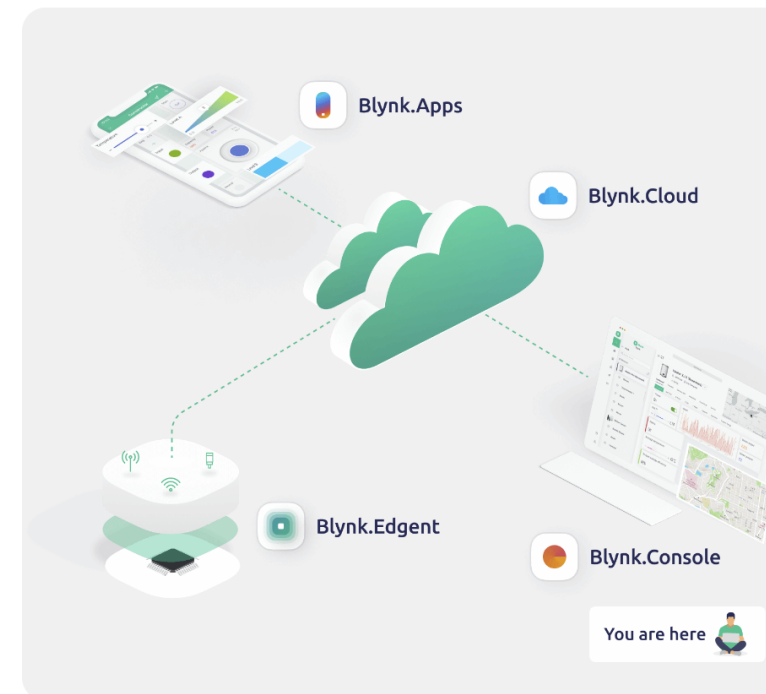
Blynk platform consists of four main components that work seamlessly together:

**Blynk.Edgent:** software that runs on your device and communicates with Blynk.Cloud.

**Blynk.Console:** web application where you can configure, connect, oversee your devices, analyze sensor data, update firmware OTA, and manage how other users and organizations access their devices.

**Blynk.Apps:** mobile apps for iOS and Android where you can build UI for your devices with no coding, and share it with other users.

**Blynk.Cloud:** server that securely sends data between your devices and apps.



[More info here →](#)

# Open IoT Platforms

## ❖ Blynk

### Blynk Tour

✓ Welcome — ✓ Platform — 3 Modes — 4 Devices — 5 Template — 6 Template components — 7 Features — 8 Business

### Developer Mode and User Mode

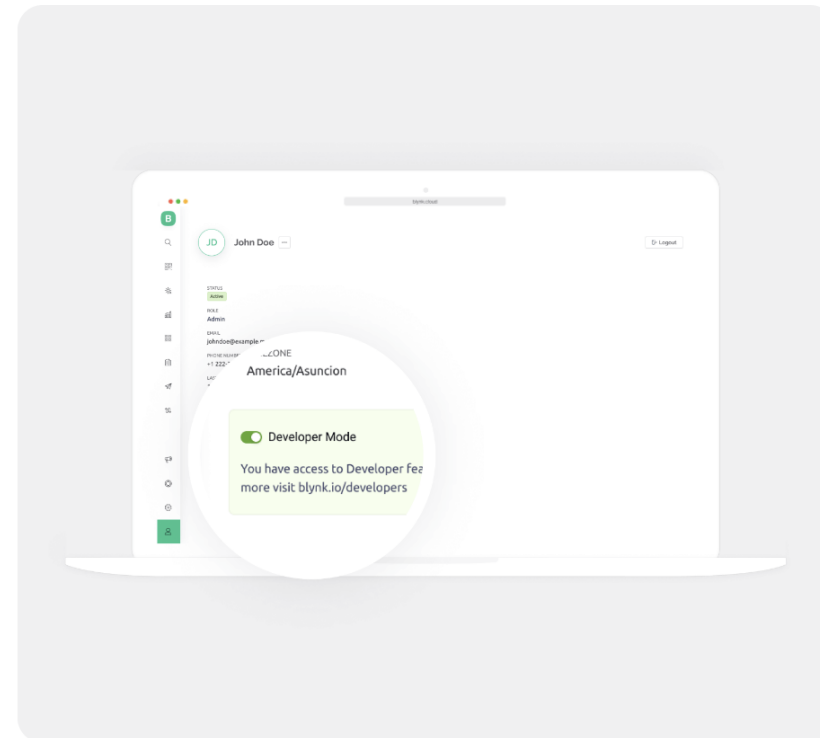
Blynk operates in 2 modes:

**Developer Mode** (which you are currently using), allows you to configure how devices should work.

**User Mode** allows to monitor and control the devices, but doesn't allow to modify any configurations.

You can switch the Developer Mode on/off in User Profile section of the main menu.

[More info here →](#)



# Open IoT Platforms

## ❖ Blynk

### Blynk Tour

✓ Welcome — ✓ Platform — ✓ Modes — 4 Devices — 5 Template — 6 Template components — 7 Features — 8 Business

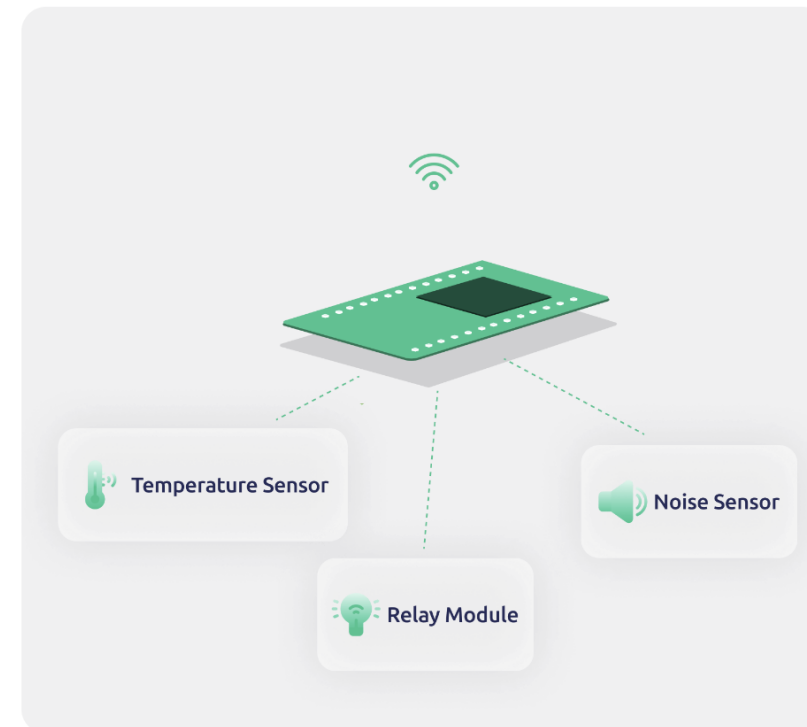
Let's learn the key concepts of Blynk Platform.

#### Device

A device is usually a microcontroller (MCU) like ESP32, Arduino, etc. You can attach sensors and actuators to an MCU and monitor or control them with Blynk

Blynk can connect your device to the Internet using WiFi, cellular or Ethernet connectivity.

[More info here →](#)



# Open IoT Platforms

## ❖ Blynk

### Blynk Tour

✓ Welcome — ✓ Platform — ✓ Modes — ✓ Devices — 5 Template — 6 Template components — 7 Features — 8 Business

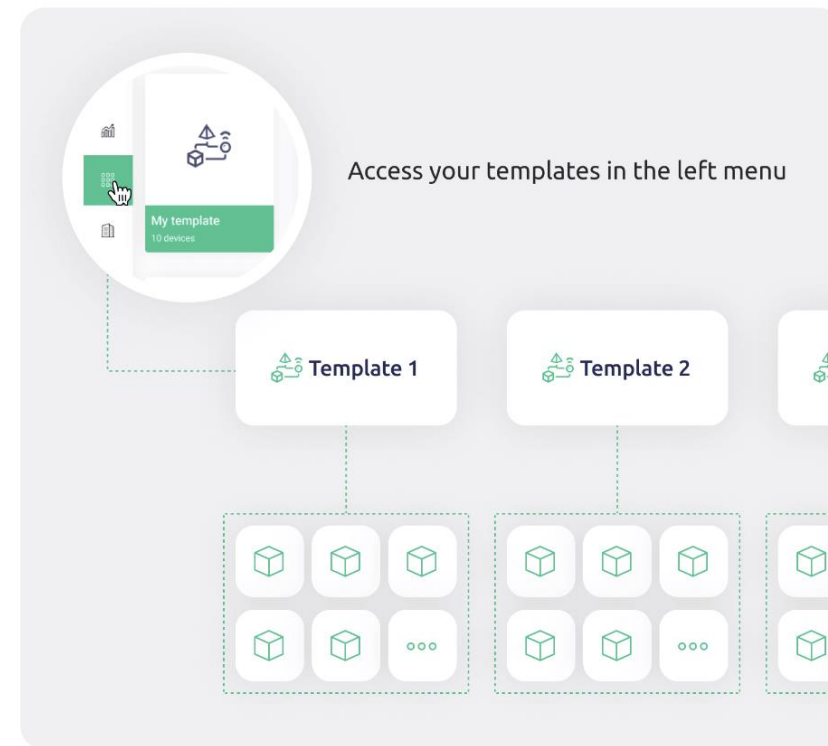
### Device Template

Device configurations are stored in something we call Device Template.

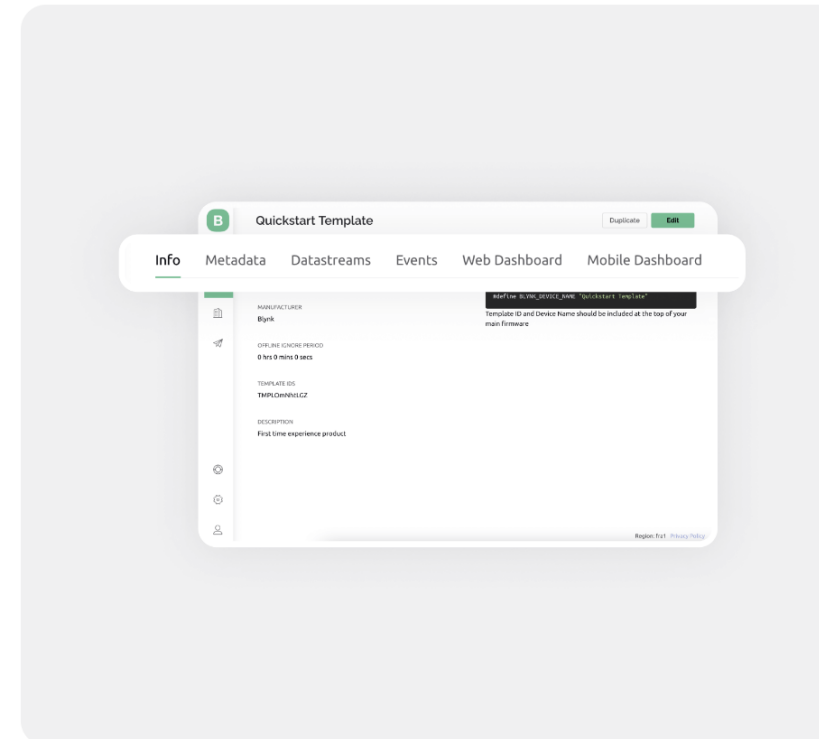
Each device starts from a template, which makes it easy to work with multiple devices that perform similar functions.

For example, you can create a Temperature Sensor Template and reuse it for all similar sensors in your house.

More in the documentation: [Device Template](#) and [Template Quick Setup](#)







# Open IoT Platforms

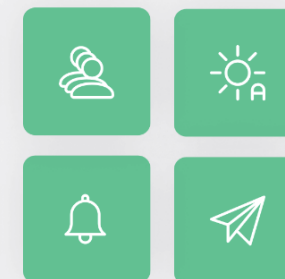
## ❖ Blynk

### Blynk Tour

✓ Welcome — ✓ Platform — ✓ Modes — ✓ Devices — ✓ Template — ✓ Template components — 7 Features — 8 Business

### Some of the cool things you can do with Blynk:

- [Set up notifications](#)
- [Set up automations](#)
- [Share your device with other users](#)
- [Update device firmware Over-The-Air](#)
- [Set up Wi-Fi provisioning](#)
- [Manage roles and permissions](#)
- [Manage organizations](#)



# Open IoT Platforms

## ❖ Blynk

### Blynk Tour

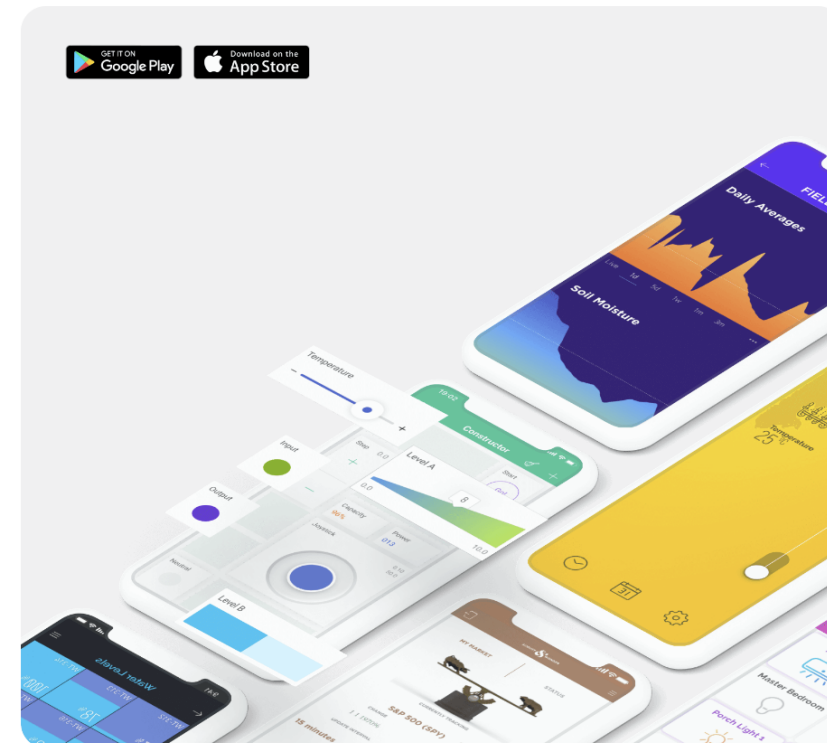
✓ Welcome — ✓ Platform — ✓ Modes — ✓ Devices — ✓ Template — ✓ Template components — ✓ Features — 8 Business

### Blynk for Businesses

Using Blynk PRO or Business plan, you can build commercial IoT products and manage how your clients access them.

With Blynk Business, you can even get your own app and publish it to the app stores under your company brand.

[Review Plans](#)



# Open IoT Platforms

## ❖ Blynk

- Let's dive into Blynk...

# Open IoT Platforms

## ❖ Explore more

- Turn on a LED when the GAS value is higher than 5000ppm.
- Explore the Automations and Events features.



# WiFi Provisioning

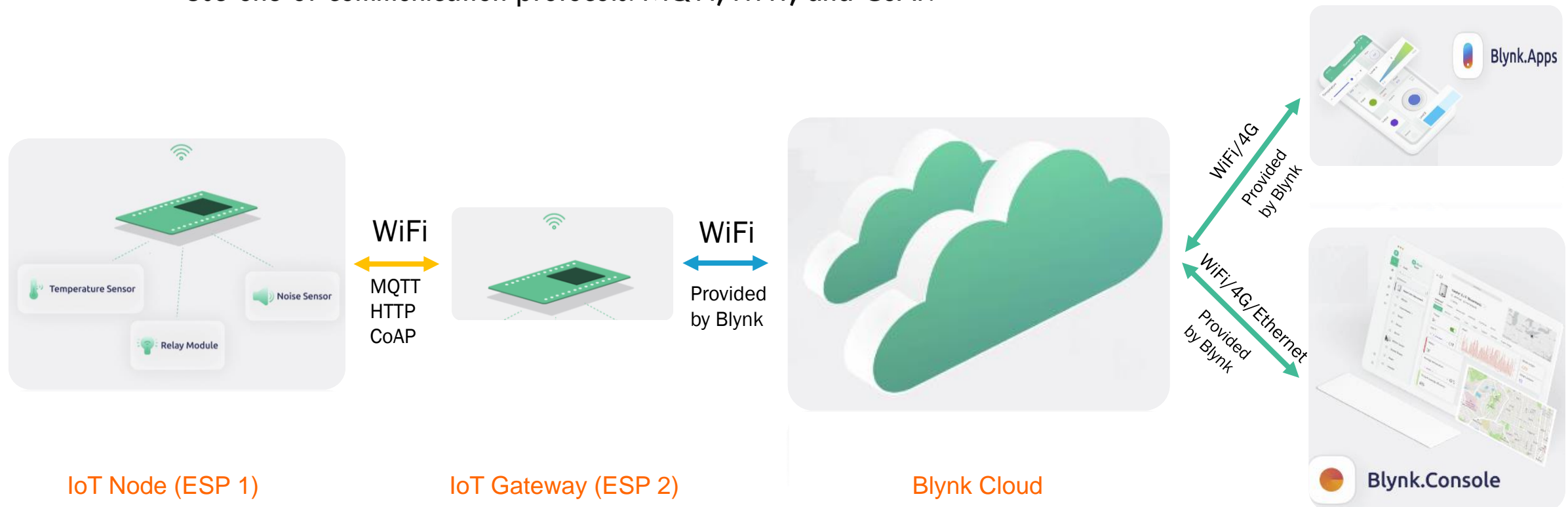
## ❖ Explore more

- Imagine that your ESP8266 is packaged as a commercial product and cannot be flashed anymore.  
How does it connect to a new WiFi?

# IoT Architecture for the Mini-Project

## ❖ Suggest:

- Use two ESP8266 as an IoT node and IoT gateway.
- Use one of communication protocols: MQTT, HTTP, and CoAP.



# THANK YOU!