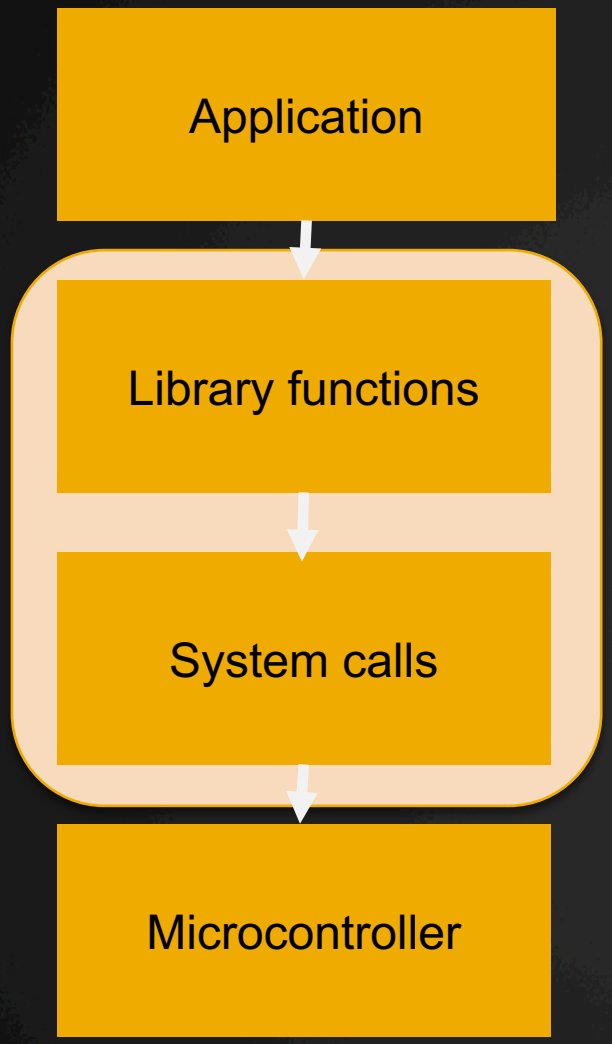
IoT Experiments - build your own prototype!

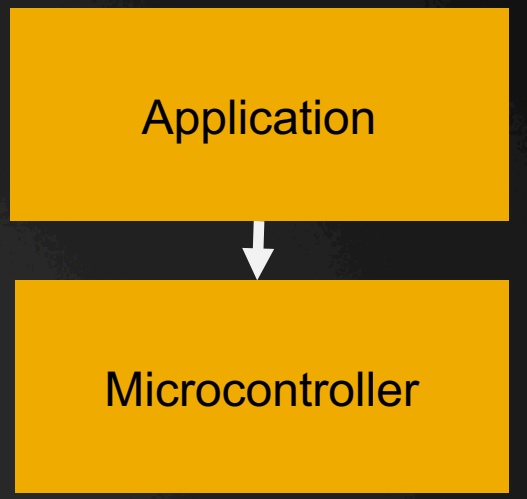
Michał Bogacz

Part 2

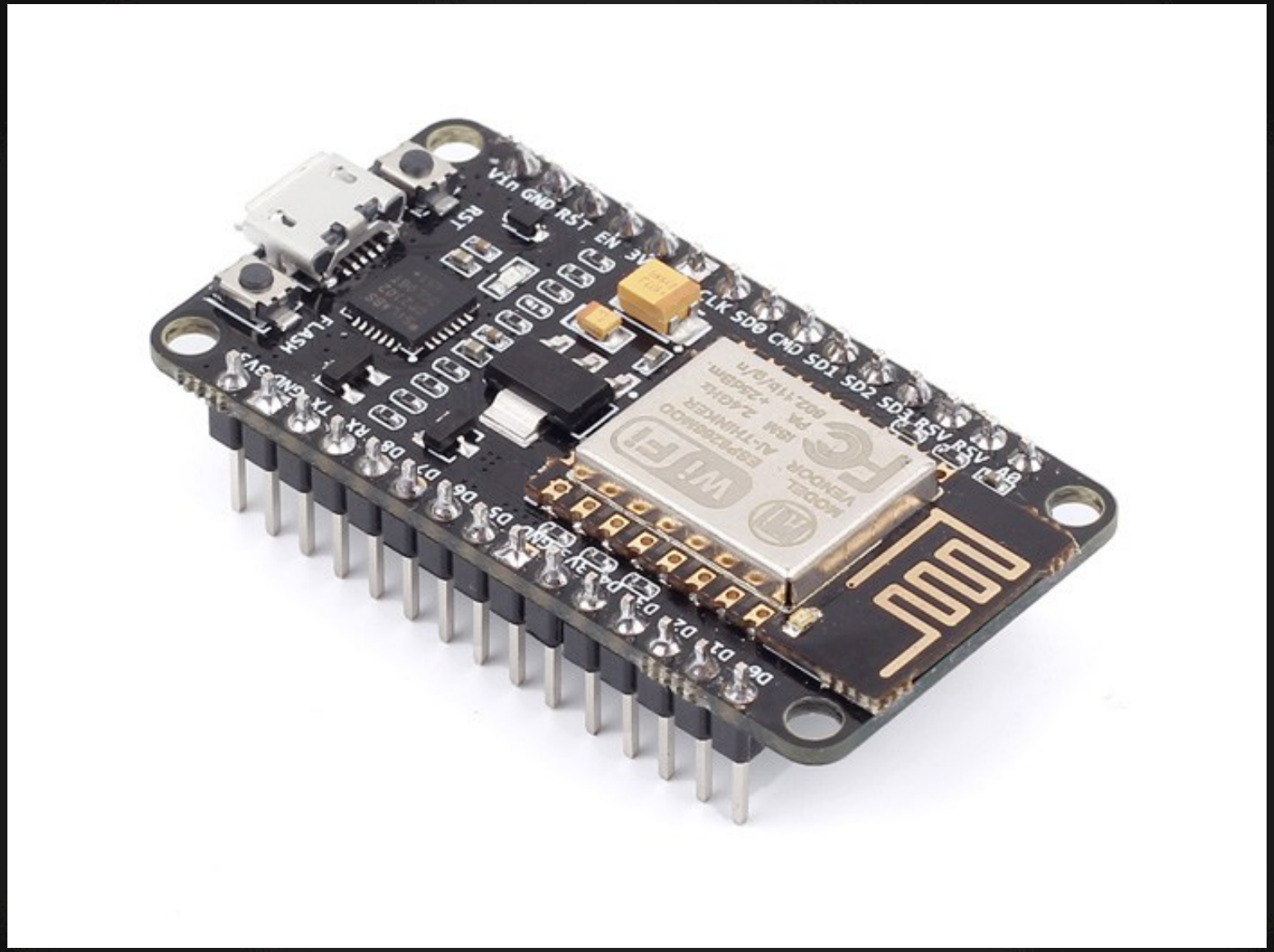
- Introduction to Arduino
- Examples LED + DHT sensor
- Task

Forget about Operating System

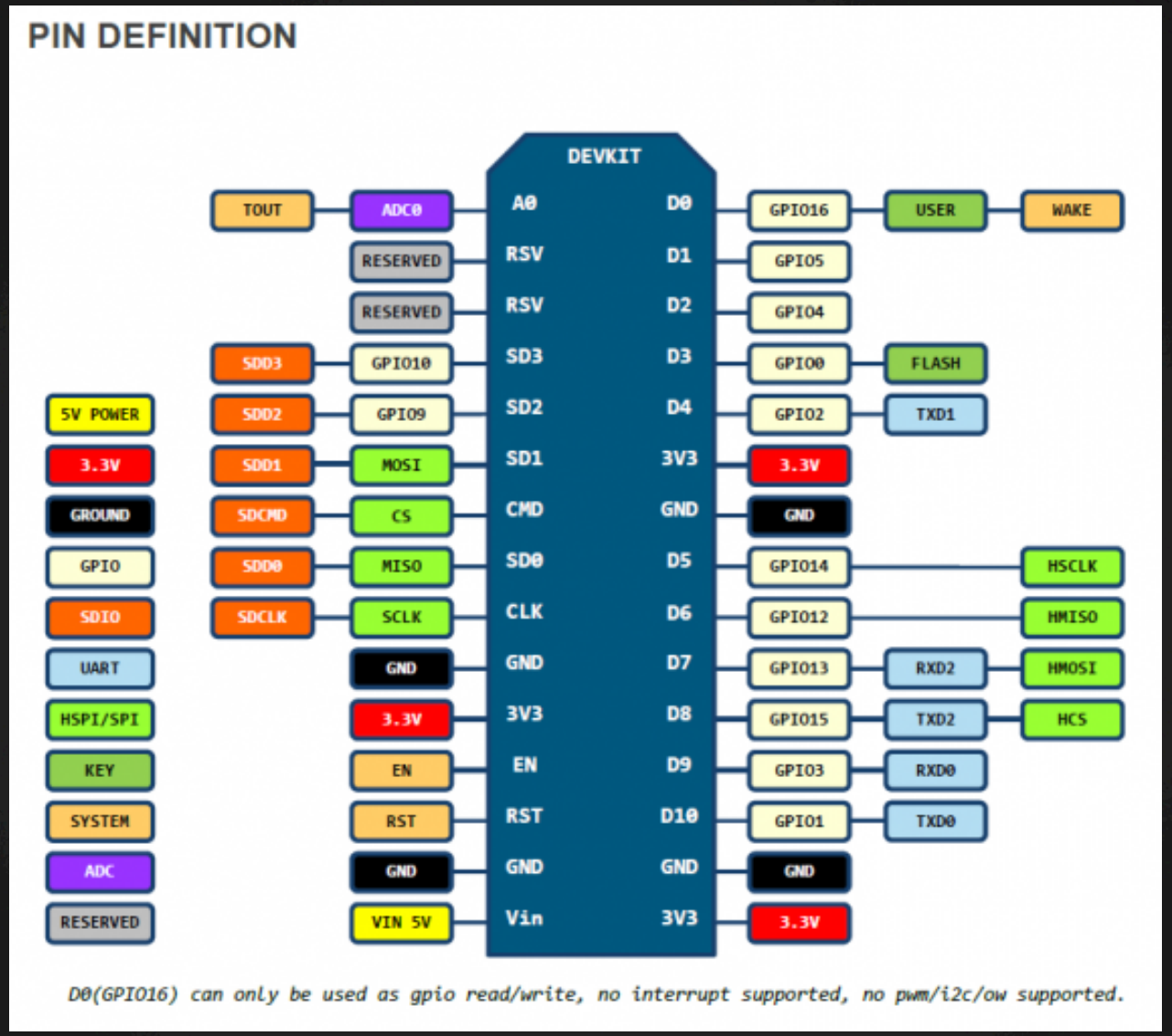




Focus on pins



Focus on pins



Arduino


blink | Arduino 1.6.11
blink
/*
* Blink
* Turns on the onboard LED on for one second, then off for one second, repeatedly.
* This uses delay() to pause between LED toggles.
*/
void setup() {
pinMode(BUILTIN_LED, OUTPUT); // initialize onboard LED as output
}
void loop() {
digitalWrite(BUILTIN_LED, HIGH); // turn on LED with voltage HIGH
delay(1000); // wait one second
digitalWrite(BUILTIN_LED, LOW); // turn off LED with voltage LOW
delay(1000); // wait one second
}
5
NodeMCU 1.0 (ESP-12E Module), 80 MHz, 115200, 4M (1M SPIFFS) on /dev/cu.usbmodem1884371

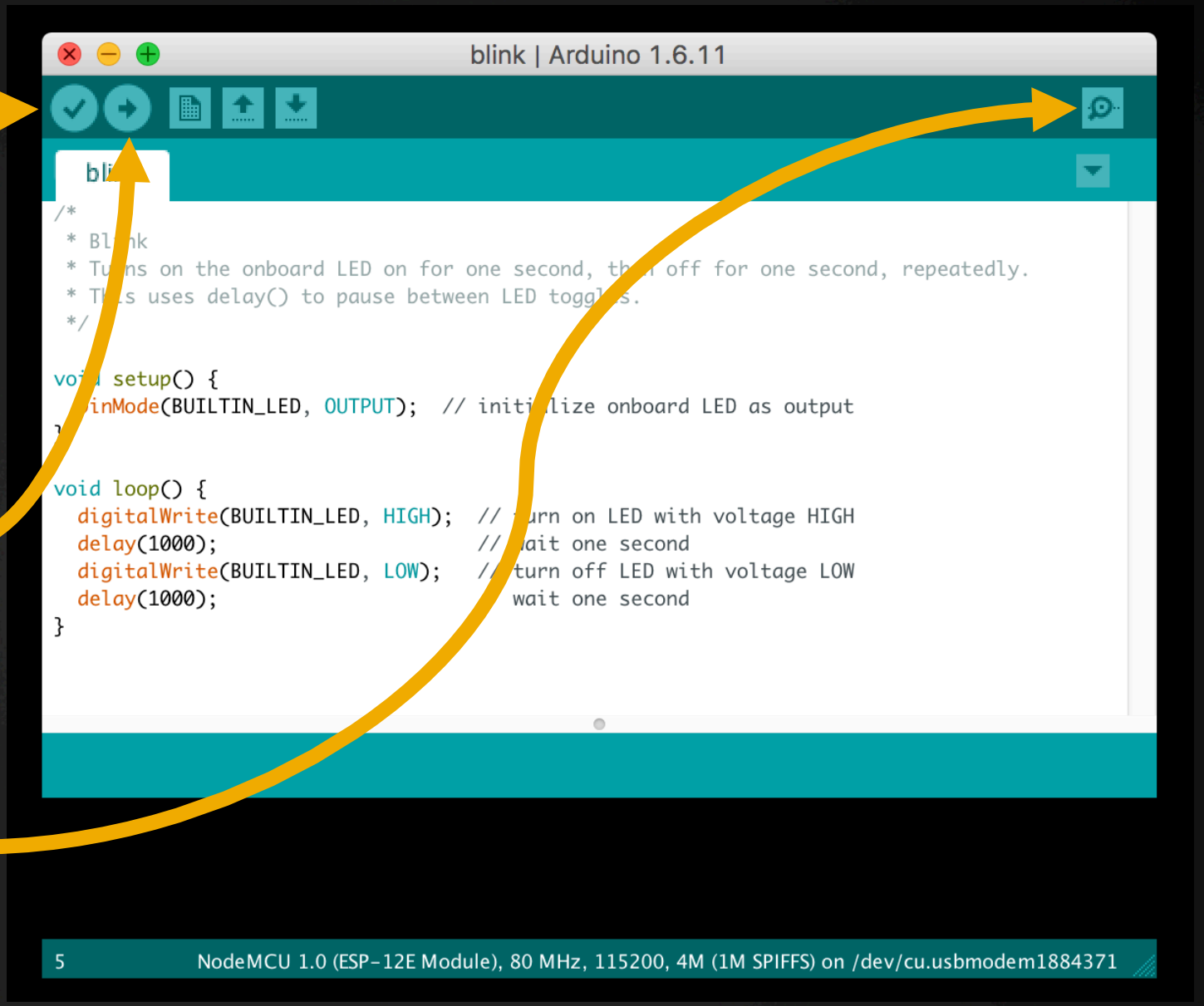
Arduino IDE

Compile

Compile+

Upload

Serial Monitor



Arduino Code

setup()

loop()

delay(ms)

Device configuration

Tools:

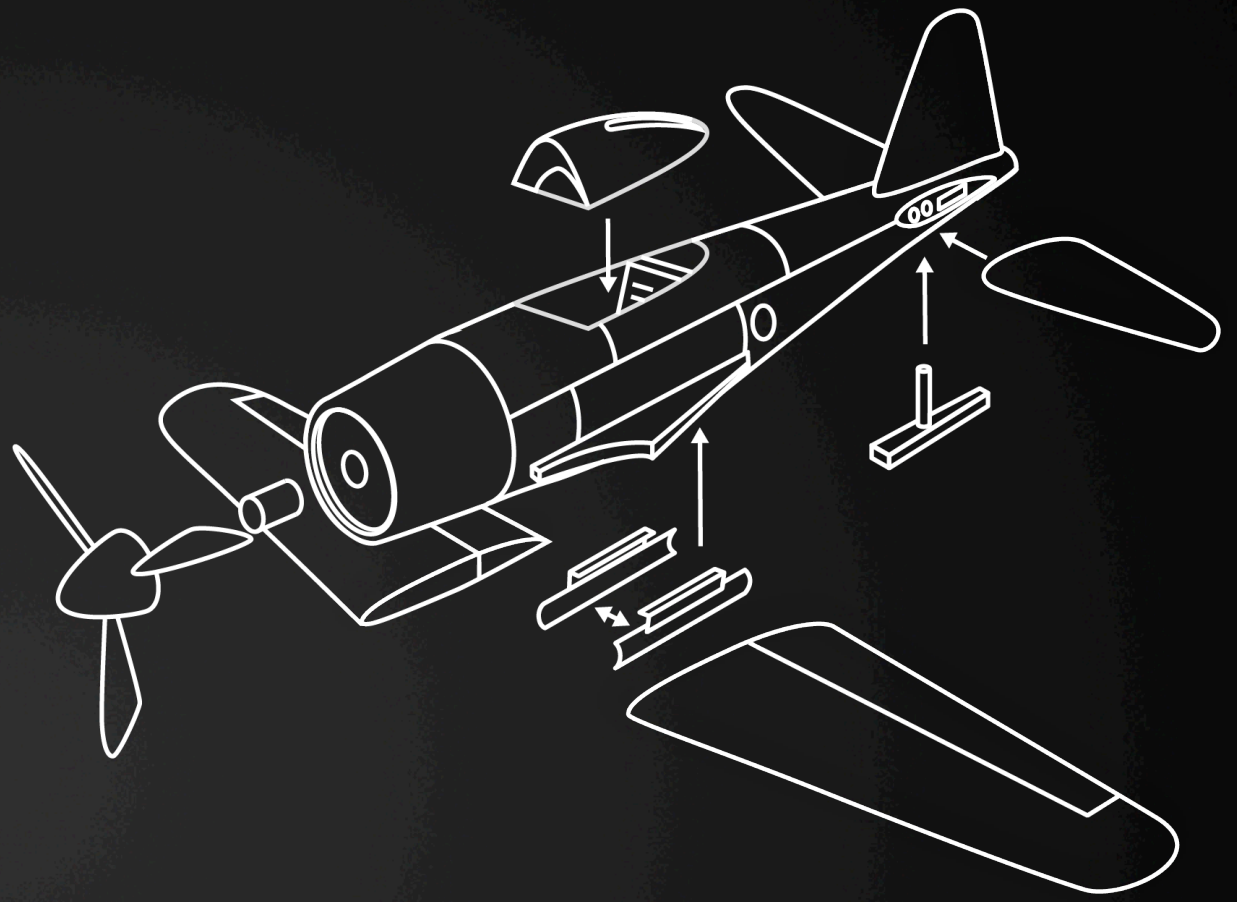
- Board: NodeMCU 1.0 (ESP-12E Module)
- Flash Size: 4M (1M SPIFFS)
- CPU Frequency: 160 MHz
- Upload Speed: 115200
- Port: /dev/cu.SLAB_USBtoUART / COM?

Code is on GitHub

https://github.com/dshop-gliwice/iot-workshop

Example

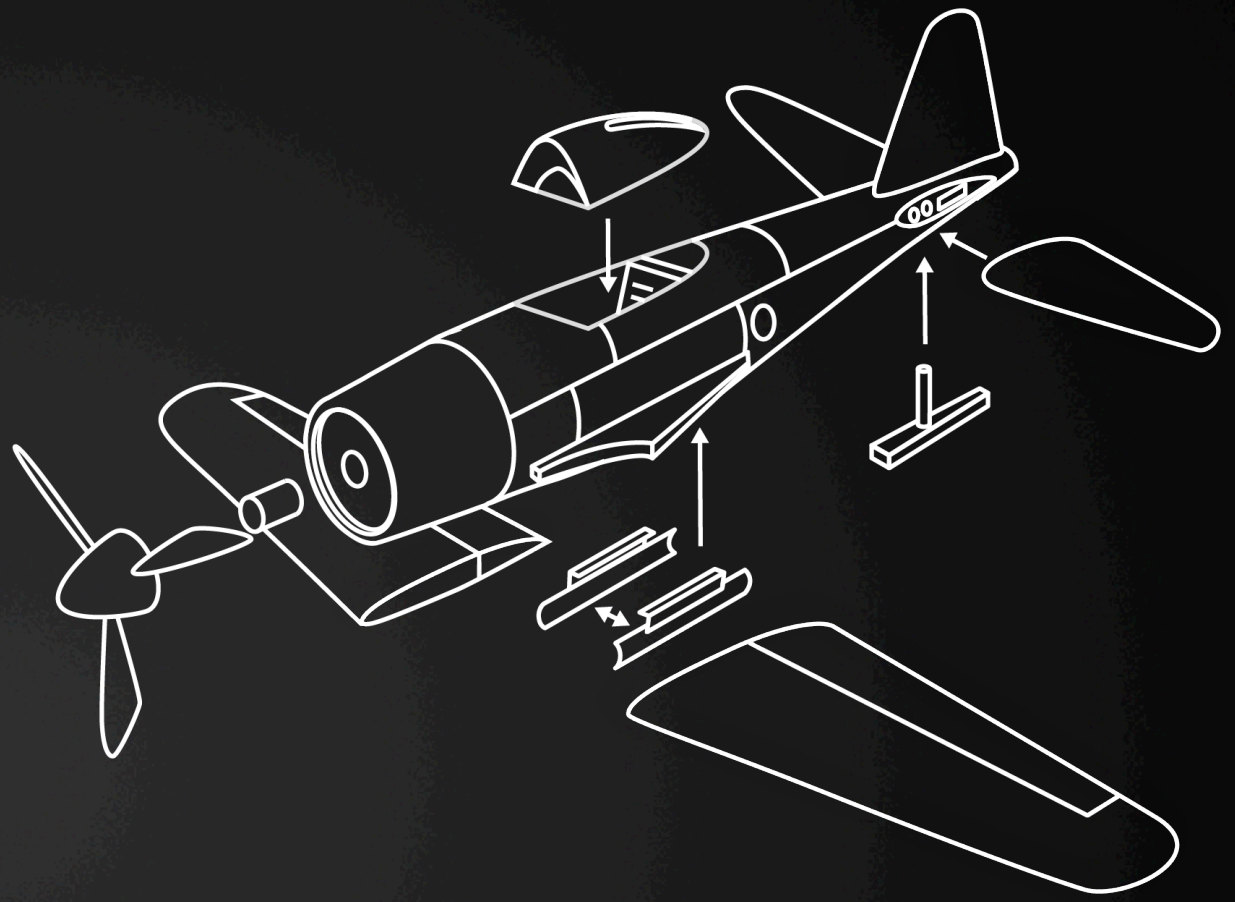
Blink LED



step2 -> blink

Example

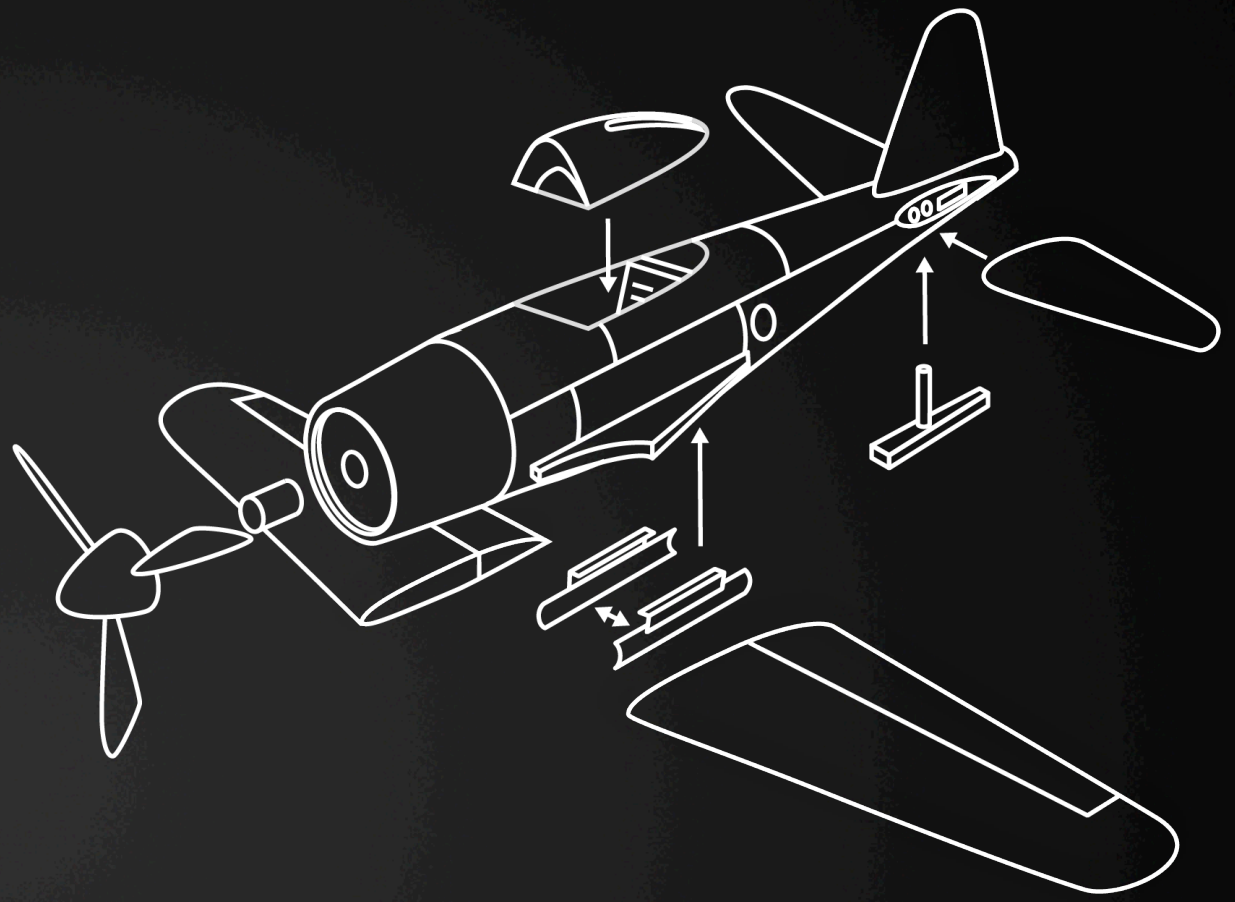
Temperature and humidity sensor DHT-11



step2 -> dht-sensor

Task

Turn on LED when temperature is over degrees 28 Celsius (turn off when lower)



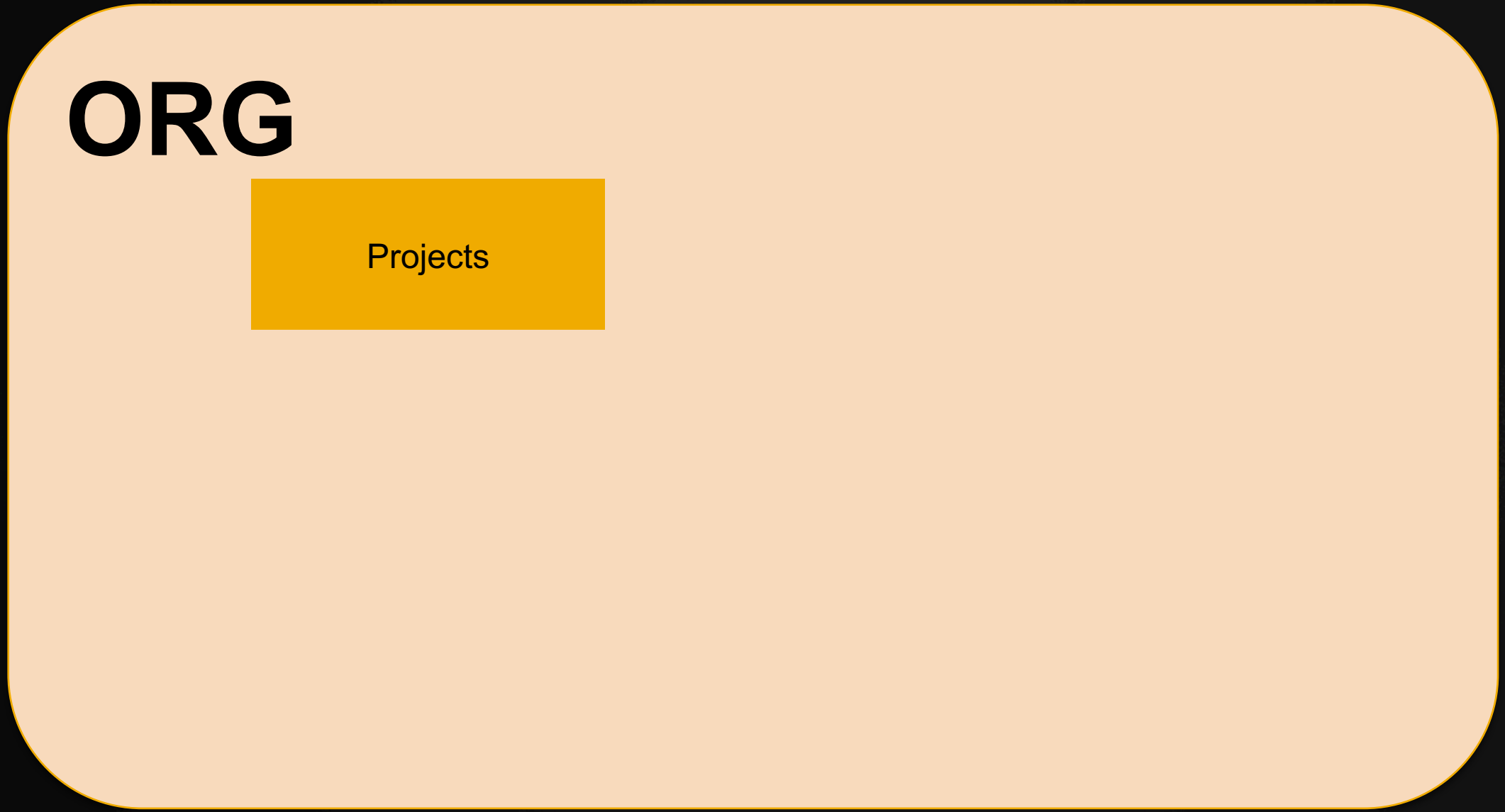
Part 4

- Yaas security
- Document service
- Code!

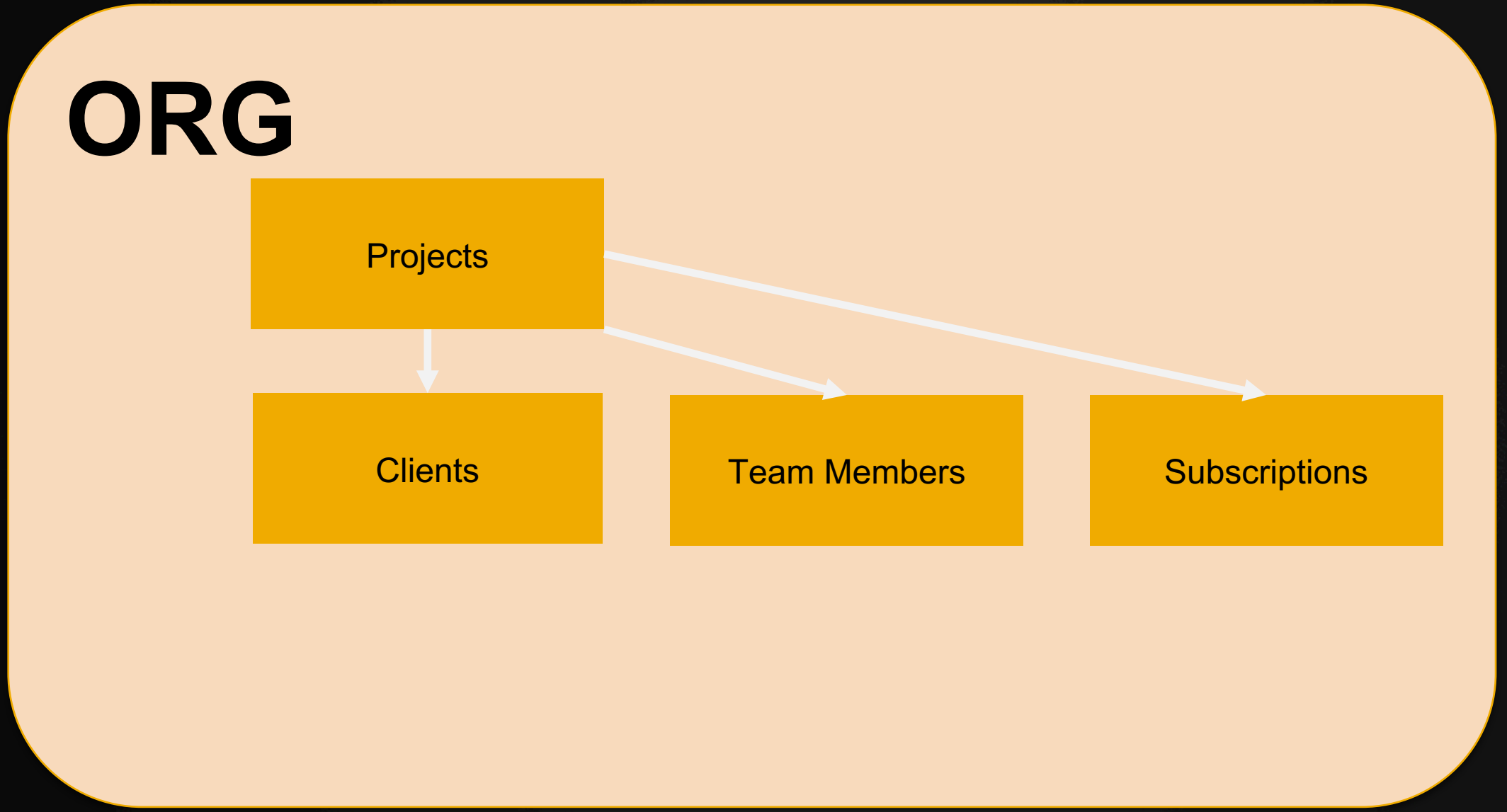
Yaas security

ORG

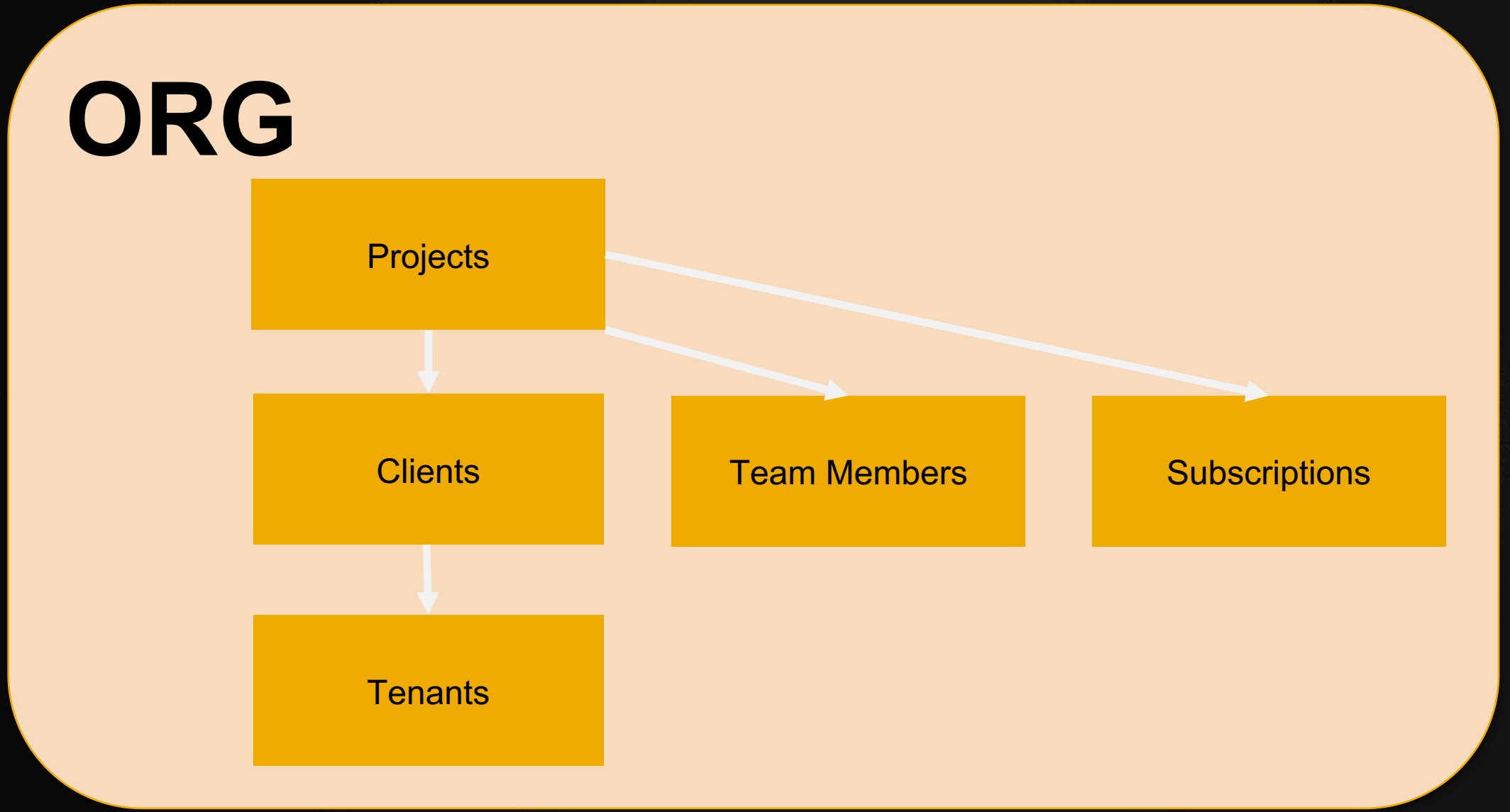
Yaas security



Yaas security



Yaas security



Your own organization

1. Create your own organization
2. Create your own project
3. Subscribe to persistence package (beta)
4. Create client
5. Get OAuth Token
6. Ready to send data!

Document service

Storage

JSON Documents, multitenant, scalable

REST

All operations on service can be done with REST

Price

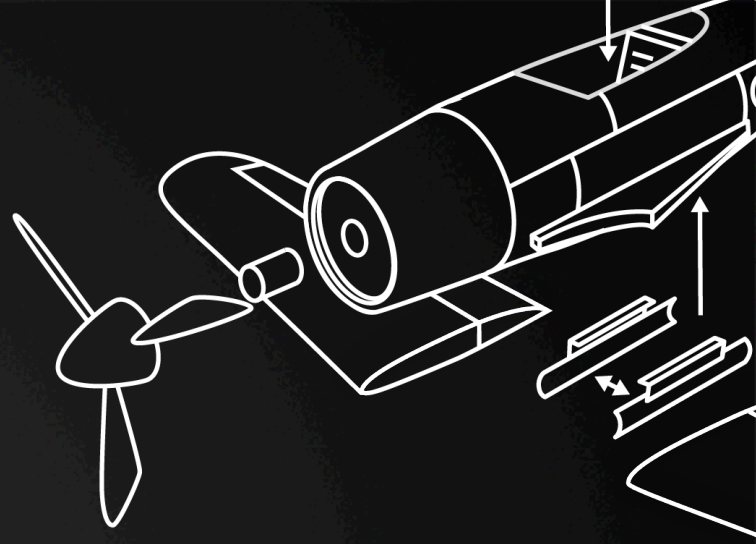
- 10GB for free
- 1,000,000 Reads API Calls
- 100,000 Writes API Calls

Document service - tips

- Documentation: https://devportal.yaas.io/services/document/latest
- ”main path” https://api.yaas.io/hybris/document/v1/{tenant}/{client}/data/{type}
- POST – send data
- GET – receive data
- Postman for API test
- Results for get are paged (default pageNumber=1, pageSize=16)
- You can use query parameter “?fetchAll=true” to get all results

Example

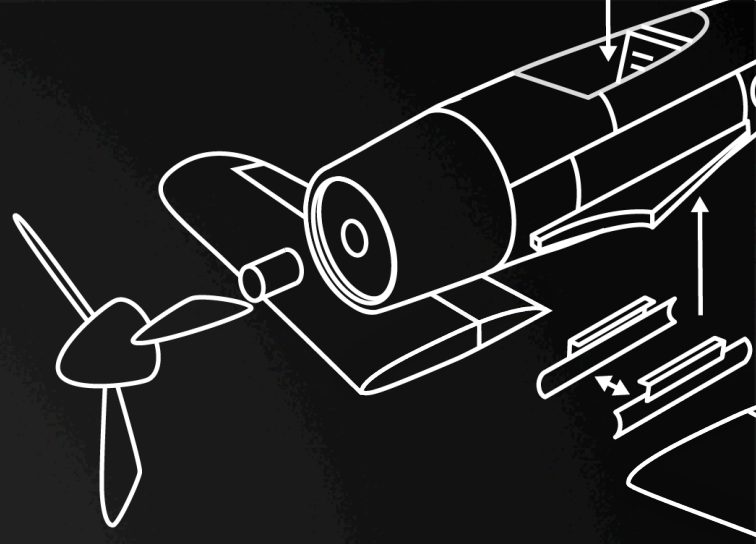
Get token with NodeMCU



step4 -> get-access-token

Final Example

Send data to Document service with DHT-11



POST https://api.yaas.io/hybris/document/v1/iotexp/iotexp.demoapp/data/{type}

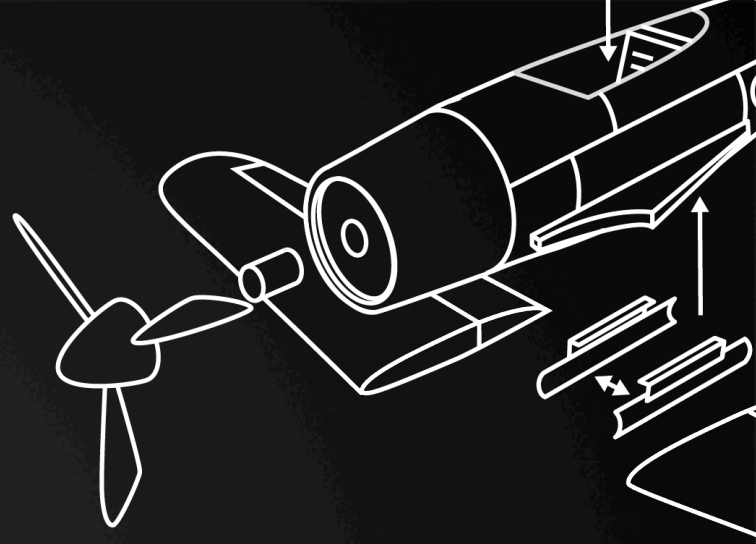
As {type} use your name and three letter of surname

Body:

```
{
        ”t” : 25.1,
        “h”: 50.0
}
```

Result are visible with project step4/charts

Summary



Yaas Builder - https://builder.yaas.io

Yaas documentation - https://devportal.yaas.io

Arduino code for ESP8266 - https://github.com/esp8266/Arduino

Bullseye overview –

https://labs.hybris.com/2016/04/18/bullseye-in-a-nutshell-part-1-overview

https://hackingat.hybris.com

THANK YOU!