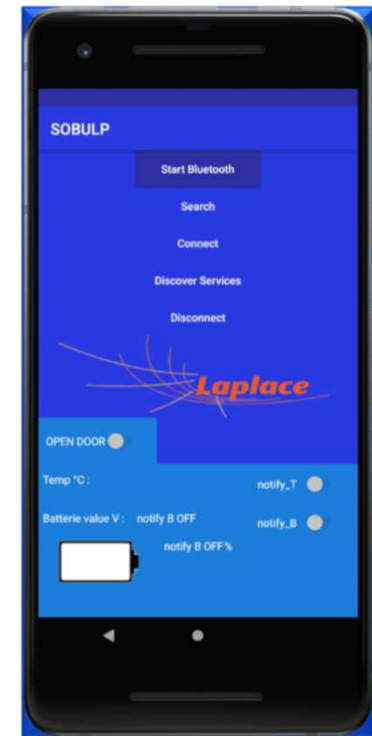


# Boîte de transfert autonome

## SOBULP : *Self-Opening Box Under Low Pressure*



# SOBULP

---

1. Projet Scientifique
2. Projet Electronique
3. Elément du boitier SOBULP
4. Le microcontrôleur Cypress
5. La partie logicielle IHM avec Android Studio

# 1. Le projet scientifique

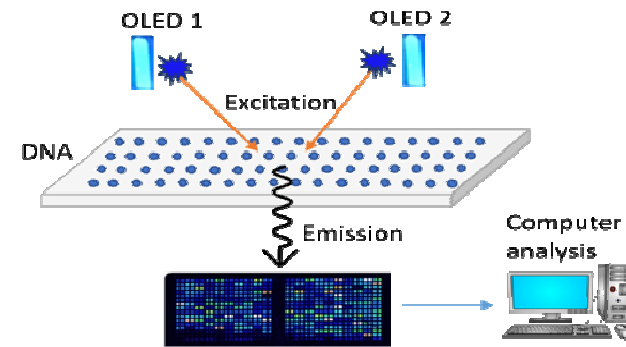
# OLED : Organic Light Emitting Diode

- ✓ Facilité de fabrication
- ✓ Faible consommation d'énergie
- ✓ Meilleure résolution
- ✓ Applications flexibles



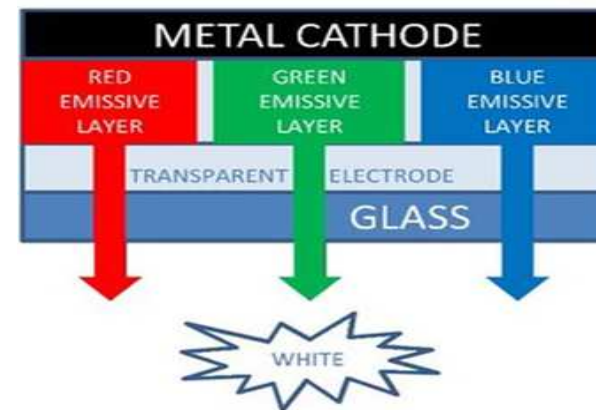
# Les applications

- ✓ Source d'excitation pour analyser des biopuces d'ADN hautement sensible.

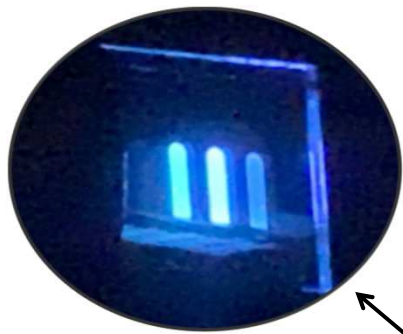


- ✓ Stérilisation des tissus sans endommager les cellules cicatrisantes.

- ✓ Ecran d'affichage et OLEDs blanches (RGB).



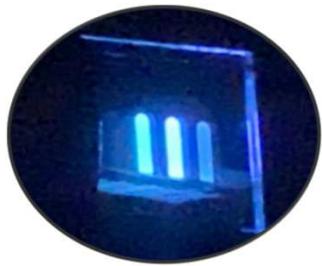
# Fabrication et caractérisation d'OLEDs



Echantillon OLED

- Conception d'OLEDs par évaporation
- Caractérisation des OLEDs (sous atmosphère Azote, sensible à l'oxygène et à l'humidité)

# SOBULP



Echantillon  
OLED



Boîte de transfert



Encapsulation par dépôt de  
Parylène

EN ROUTE VERS LA PLATEFORME 3DPHI

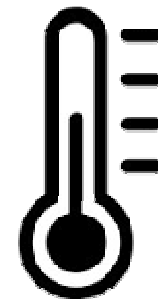
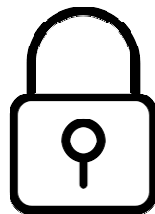
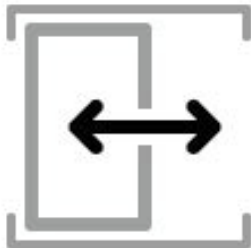
## 2. Projet Electronique



# Le cahier des charges

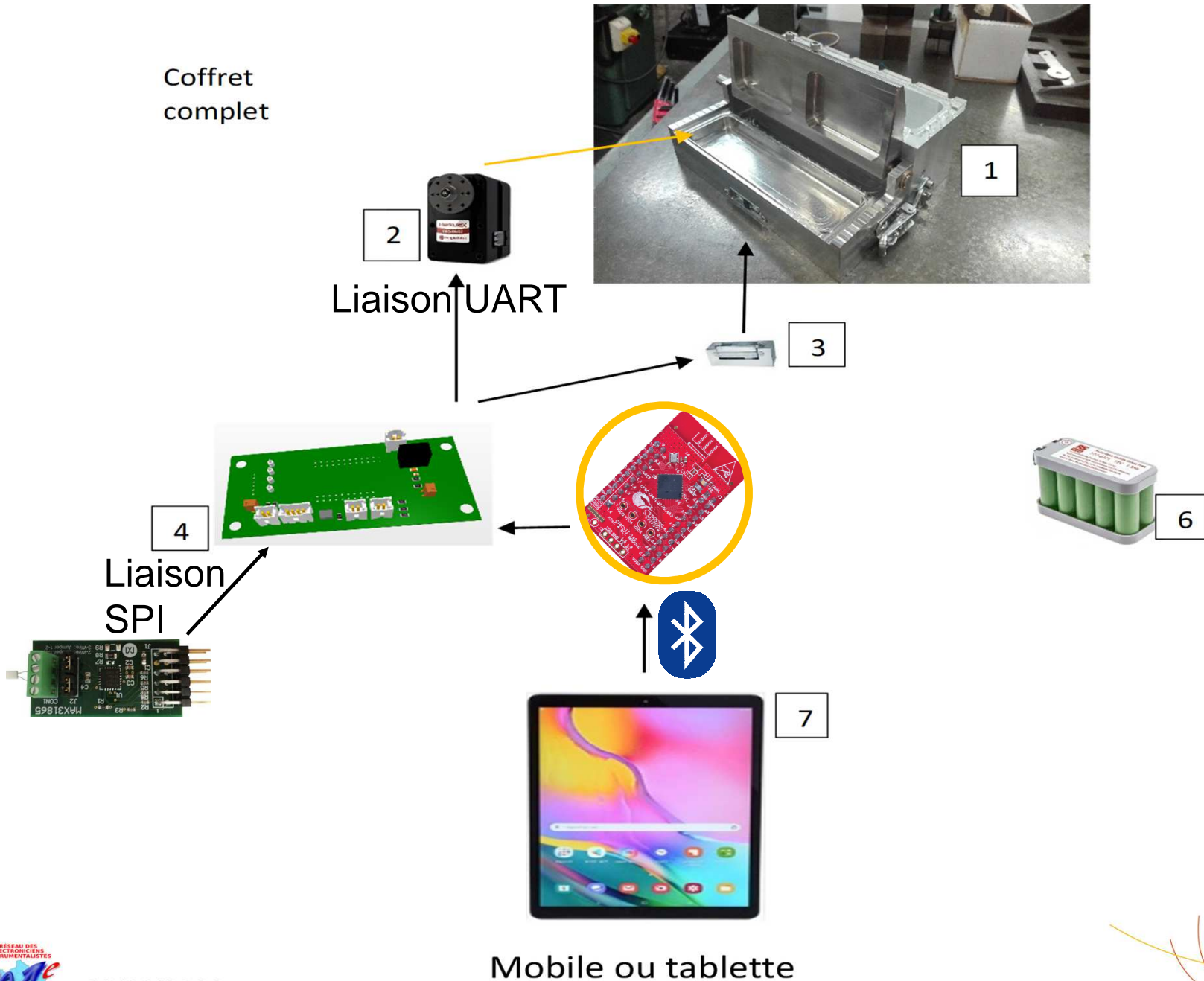
Fonctionnalités des contrôles et des commandes  
à distance attendues :

- Commande ouverture / fermeture du **capot du coffret**
- Déclenchement de l'ouverture de la **gâche**
- Mesure du niveau de **charge de la batterie**
- Lecture de la **température** dans le coffret



## 3. Élément du boîtier SOBULP

Coffret complet



## 4. Le microcontrôleur Cypress

**Prix du Kit:**

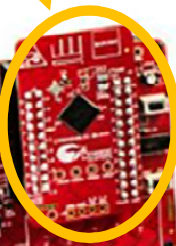
Radiospare **48 € HT**

Farnell **41 € HT**

# Kit PSoC 4 Cypress ( Infineon )

MODULE BLUETOOTH

**Prix : RS 10 € HT**



# Programmation, le logiciel : PSoC Creator 4.3

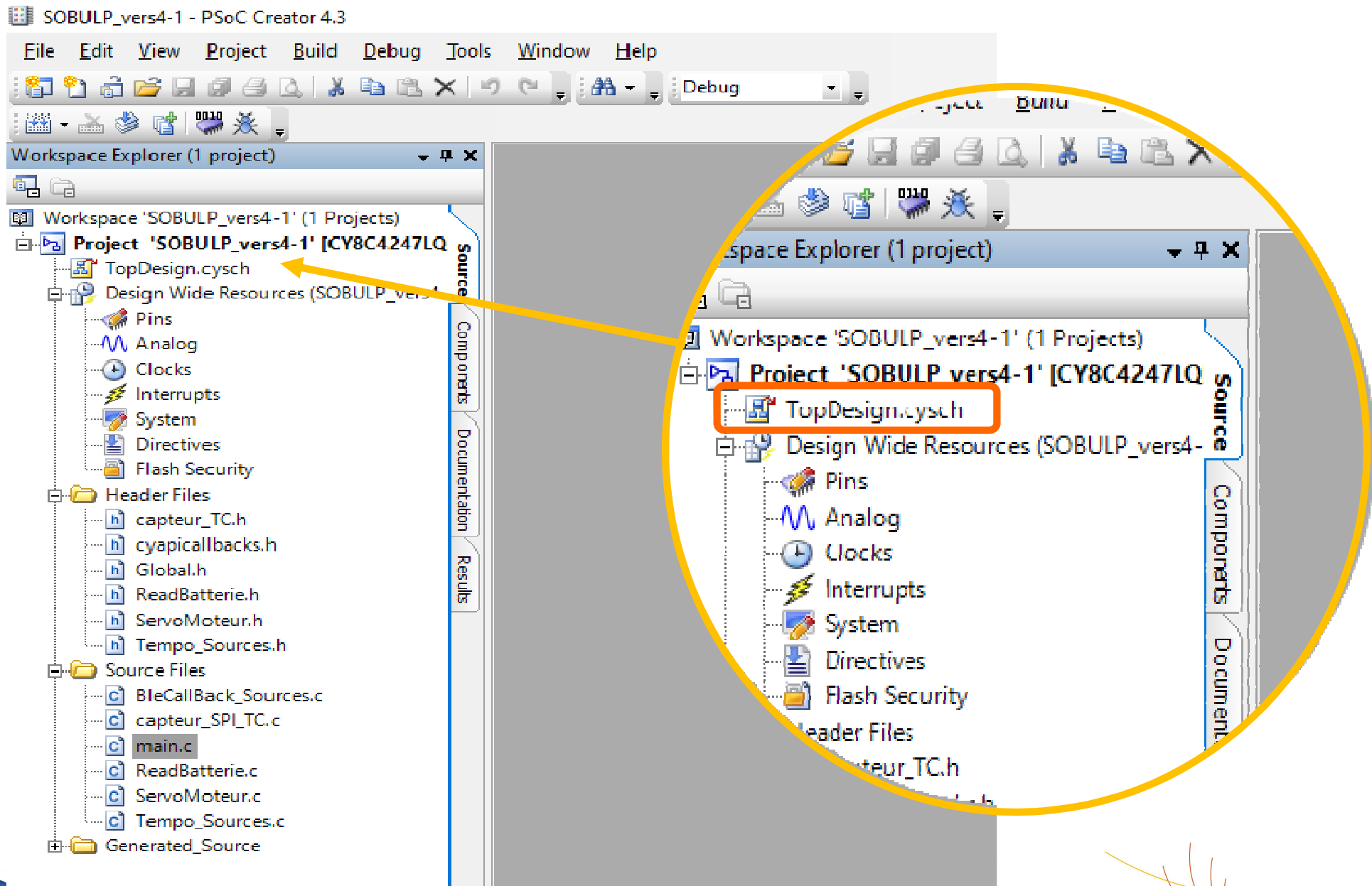
The screenshot displays the PSoC Creator 4.3 software interface. The main workspace shows a circuit diagram with a PWM component (labeled '2') connected to two LEDs (Pin\_BlueLed and Pin\_GreenLed) through logic gates. A 'Control Reg' component is also present. A 'Clock\_1' component provides a 10 kHz clock. A 'Component Catalog' on the right shows the 'PWM' component selected (labeled '1'). A 'Configure PWM' dialog box is open, showing the 'Configure' tab with settings: Name: PWM\_1, Resolution: 16-Bit, PWM Mode: One Output, Period: 2499 (Max Period = 250ms), CMP Value 1: 1250, and CMP Type 1: Less (labeled '3'). A 'Datasheet' window for the 'Pulse Width Modulator (PWM) 3.30' is also open, showing features like 8- or 16-bit resolution and multiple pulse width output modes (labeled '4'). The 'Workspace Explorer' on the left shows the project structure (labeled '5').



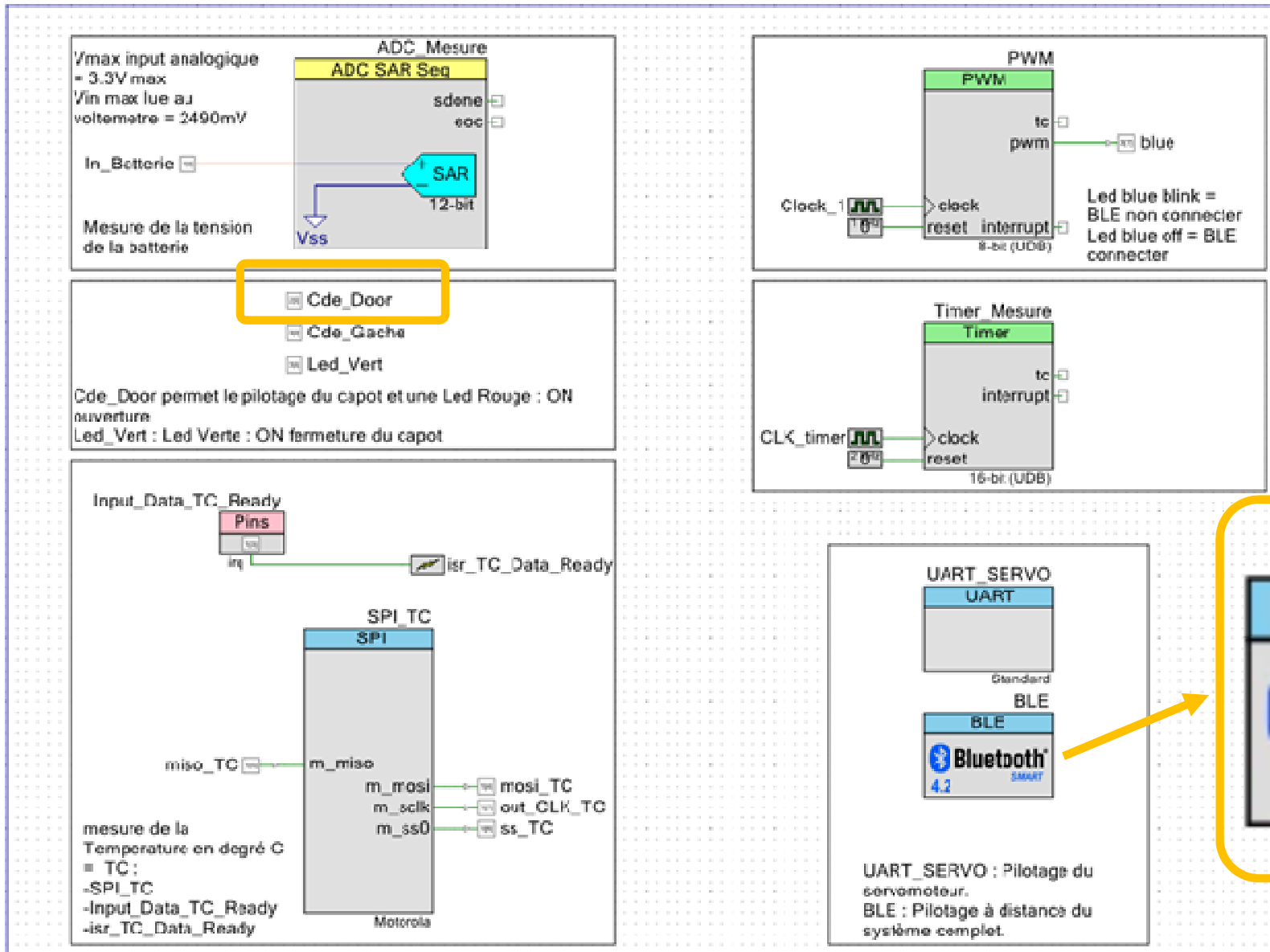
28/06/2022



# Ouverture de mon TopDesign



# TopDesign.cysch





# Configuration du module Bluetooth

Configure 'BLE' ? X

Name:

General Profiles GAP Settings L2CAP Settings Advanced Built-in

Custom

- Server
  - Generic Access
    - Device Name
    - Appearance
    - Peripheral Preferred Connection Parameters
  - Generic Attribute
    - Service Changed
    - Client Characteristic Configuration**
  - SOBULP
    - OpenDoor
      - Characteristic User Description
      - BatteryLevel
      - Characteristic User Description
    - Pression
      - Pressioncd
      - Characteristic User Description

Descriptor: **Client Characteristic Configuration**

The Client Characteristic Configuration descriptor defines how the characteristic may be configured by a specific client.

UUID:  128-bit

Name	Type	Length	Value
Fields			
Permissions			
Read		<input checked="" type="checkbox"/> Authentication: No authentication required <input checked="" type="checkbox"/> Authorization: No authorization required <input type="checkbox"/> Update after GAP Security Level change	
Write		<input checked="" type="checkbox"/> Encryption: No encryption required <input checked="" type="checkbox"/> Authentication: No authentication required <input checked="" type="checkbox"/> Authorization: No authorization required	

**Identifiant unique de l'adresse du réseau**

00002902-0000-1000-8000-00805F9B34FB

Datasheet

Configure 'BLE'

Name: ELE

General Profiles GAP Settings L2CAP Settings Advanced Built-in

- + Add Characteristic
- Custom
  - Generic Access
    - Device Name
    - Appearance
    - Peripheral Preferred Connection Parameters
  - Generic Attribute
    - Service Changed
    - Client Characteristic Configuration
    - SOBULP**
    - OpenDoor
      - Characteristic User Description
    - Batterie
      - Batteriecccd
      - Characteristic User Description
    - Pression
      - Characteristic User Description
      - Pressioncccd
    - Temperature
      - Characteristic User Description
      - Temperaturecccd

Service: Custom Service

UUID: 00000000-0000-1000-8000-00805F9B34F0 128-bit Generate LUID

Service type: Primary

00000000-0000-1000-8000-00805F9B34F0

Included services:

00000000-0000-1000-8000-00805F9B34F1

00000000-0000-1000-8000-00805F9B34F2

00000000-0000-1000-8000-00805F9B34F4

Identifiant unique de l'adresse du service = 0

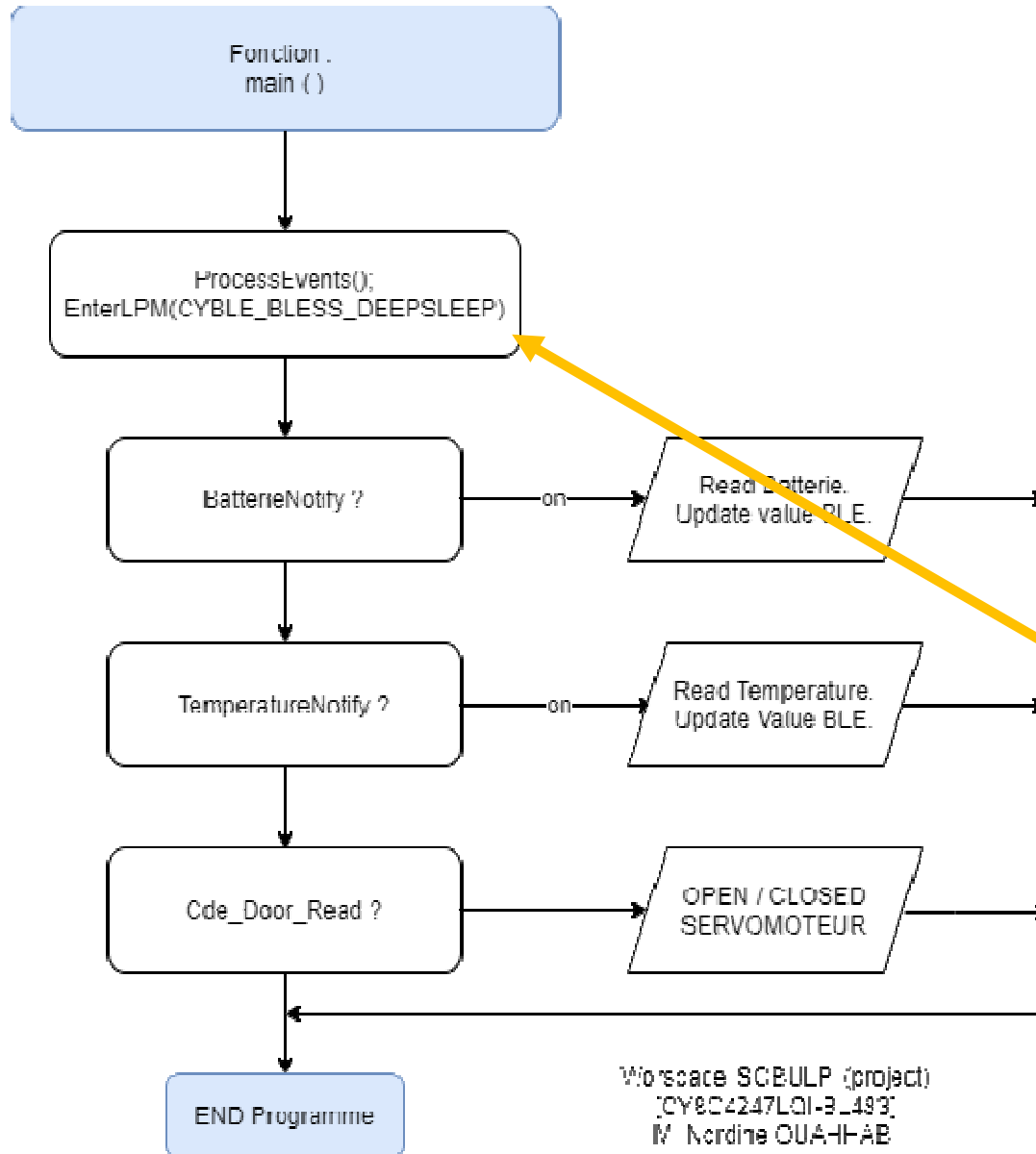
Identifiant des actions

SOBULP

28/06/2022

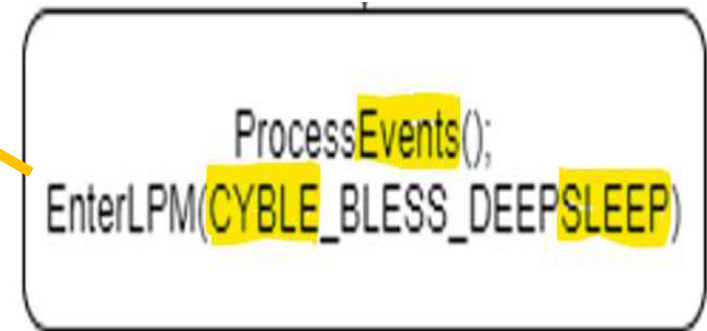


# Organigramme du programme principal: main.c



```

/*=====
 *
 *brief          SOBULP
 *version        4-1
 *date           15/01/2021
 *author         N.OUAHHABI
 *Laboratoire    LAPLACE - Toulouse
 *file           main.c
 *
 *Début projet   03/11/2018
 *Version        PSoC Creator 4.3
 *Device         CY8C4247LQI-BL483
 *=====
 */
  
```



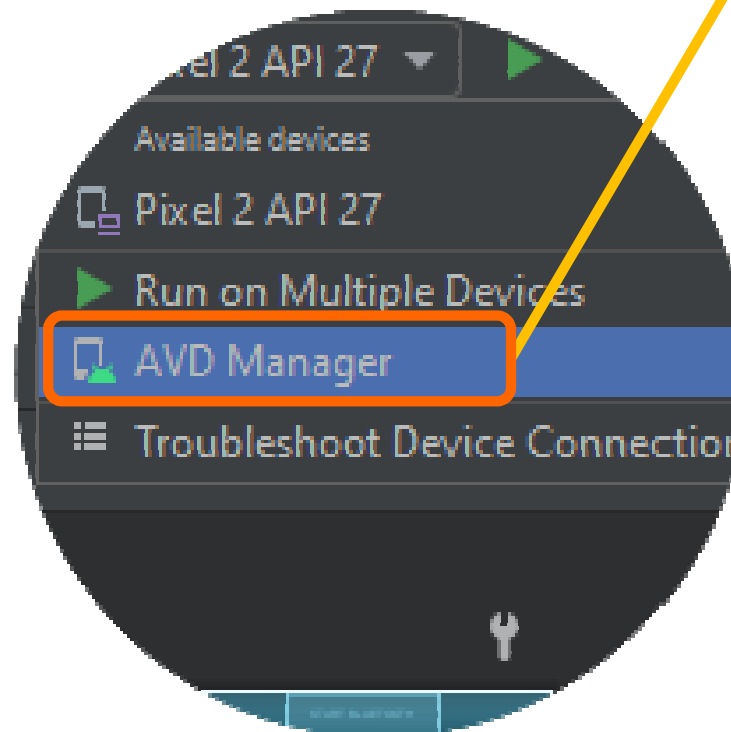
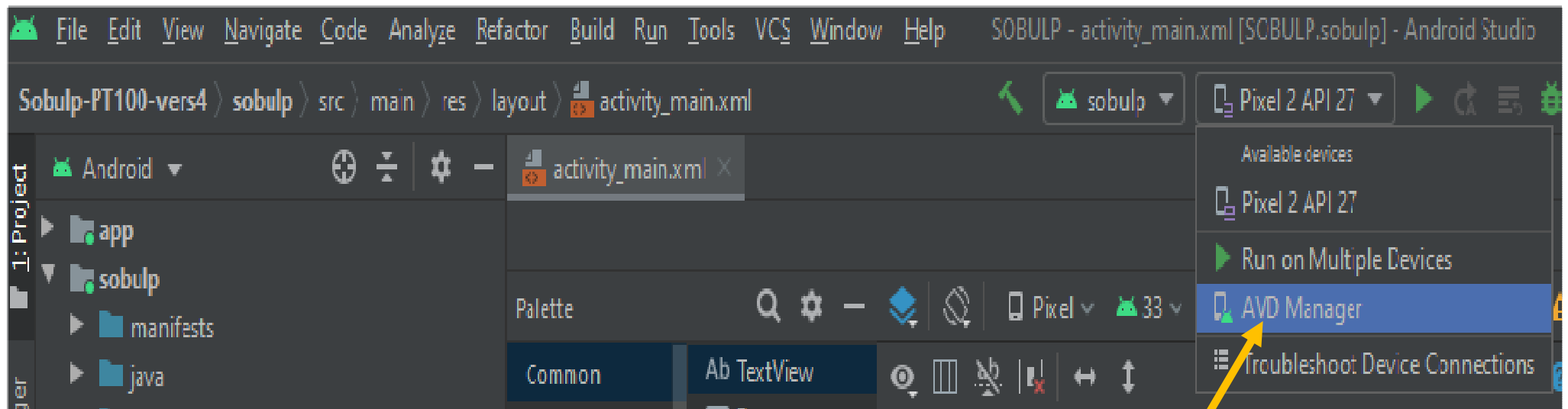
Workspace SOBULP (project)  
[CY8C4247LQI-3\_483]  
M Nordine OUAHHABI

# 5.PARTIE CONCEPTION IHM

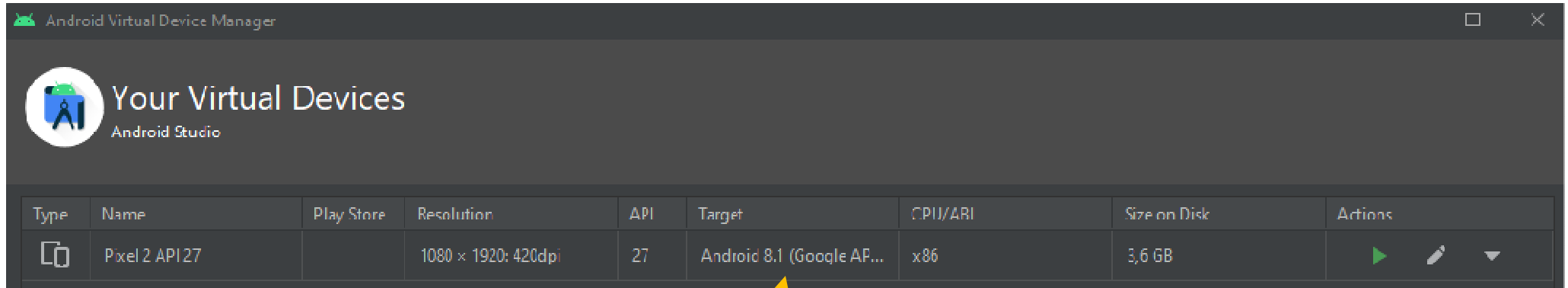
## Développement ANDROID

### Android Studio Version 4.0.1

# Choix du mobile à émuler



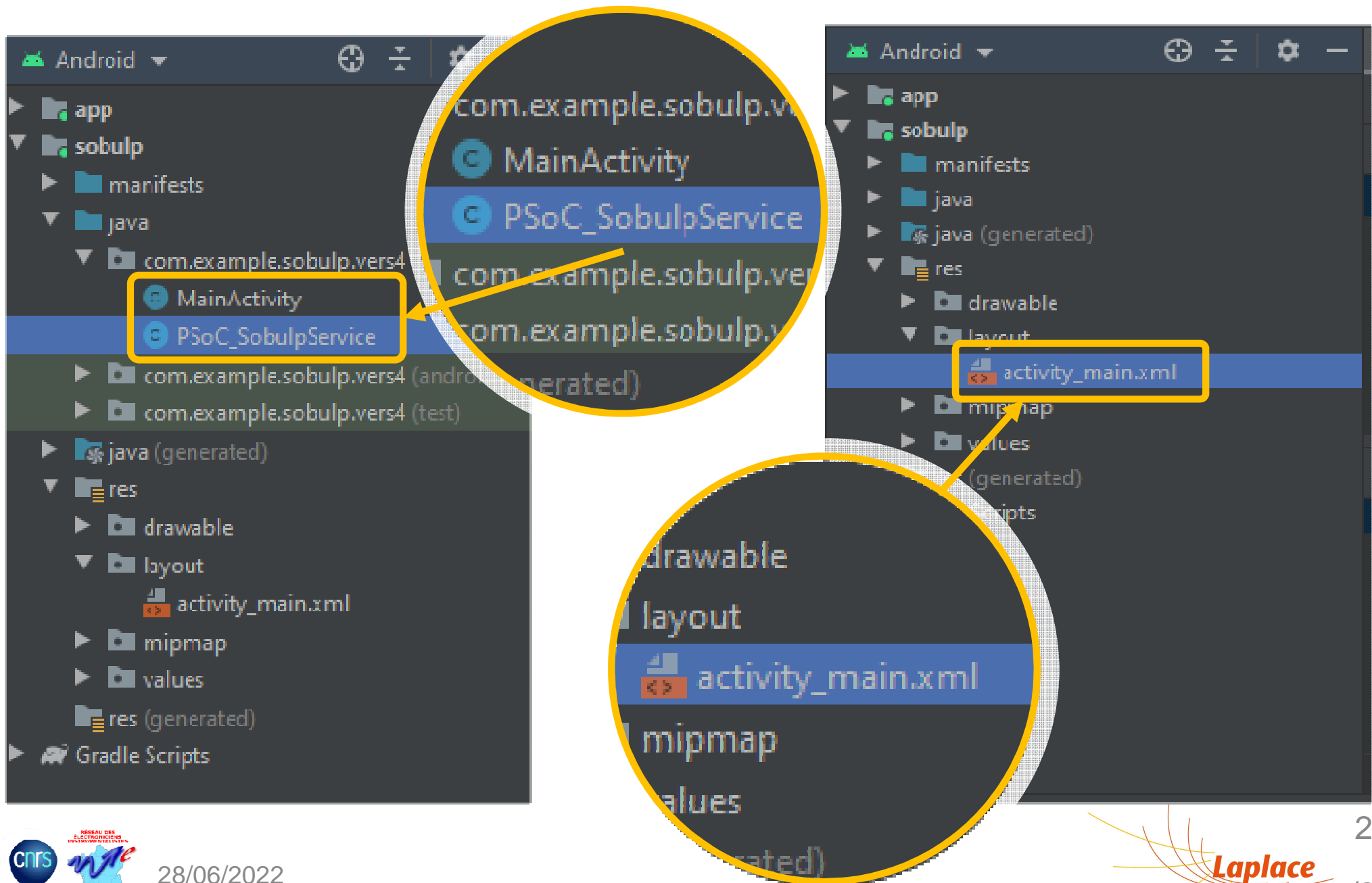
# Choix du système d'exploitation à émuler



Target

Android 8.1 (Google AP...

# Les fichiers du projet android



# « Form » de l'application

Code Split **Design**

**Code** Split Design

```
<Button
    android:id="@+id/start_button"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginLeft="125dp"
    android:layout_marginRight="125dp"
    android:background="@color/colorPrimaryDark"
    android:enabled="true"
    android:onClick="startBluetooth"
    android:text="Start Bluetooth"
    android:textAllCaps="false"
    android:textColor="@android:color/white" />
```



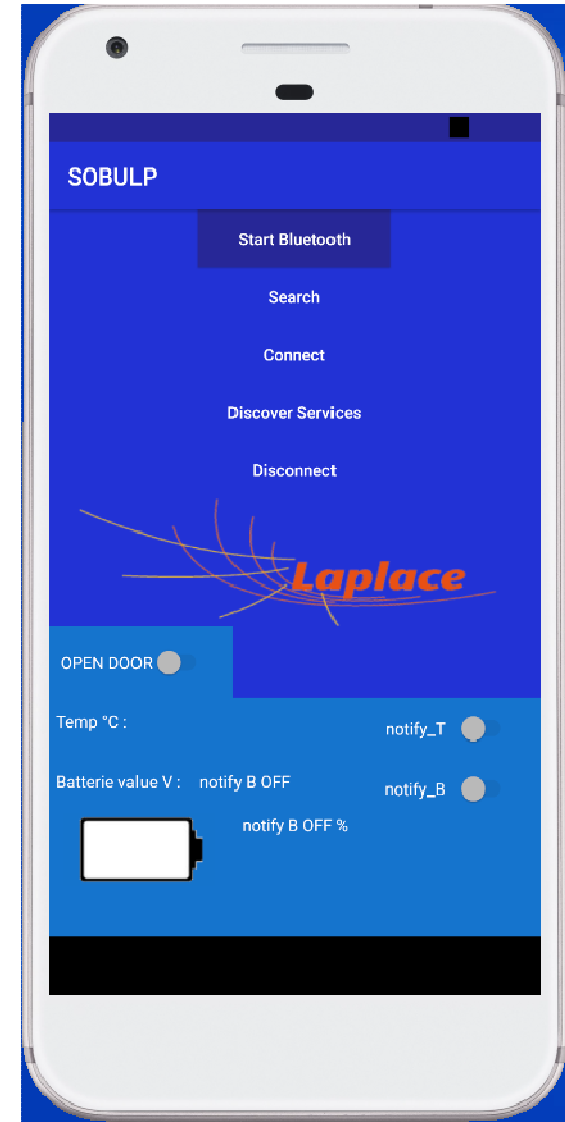
# Adresse UUID du réseau et des services

UUIDs for the service and characteristics that the custom SOBULP service uses

```
String baseUUID           = "00000000-0000-1000-8000-00805F9B34F";  
String Sobulp_ServiceUUID = baseUUID + "0";  
String DoorCharacteristicUUID = baseUUID + "1";  
String BatterieCharacteristicUUID = baseUUID + "2";  
String CccdUUID          = "00002902-0000-1000-8000-00805F9B34FB";
```

```
public double getTemperatureValue() { return mTemperatureValue; }
```

# Virtual Device : RUN émulation



# Installation de l'exécutable



# Merci de votre attention!

