

# Quick Start Guide

BlueCoin Starter Kit - STEVAL-BCNKT01V1



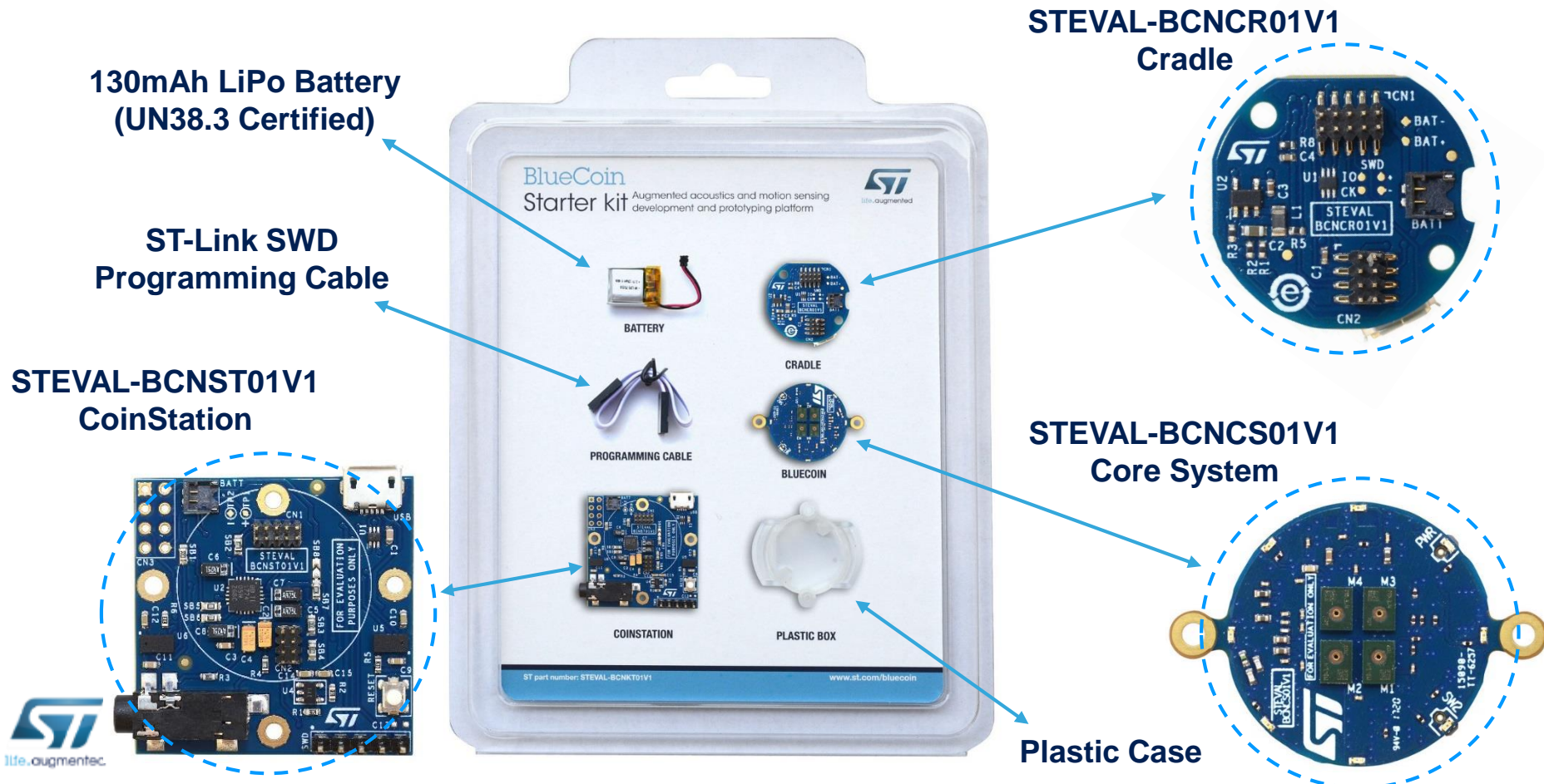
[www.st.com/bluecoin](http://www.st.com/bluecoin)



# STEVAL-BCNKT01V1– BlueCoin Starter Kit

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With the expanded capabilities of its starter kit, BlueCoin lets you explore advanced sensor fusion and signal processing functions for robotics and automation applications with a 4 digital MEMS microphone array, a high-performance 9-axis inertial and environmental sensor unit and time-of-flight ranging sensors.



# First Setup – Run the preloaded Demo

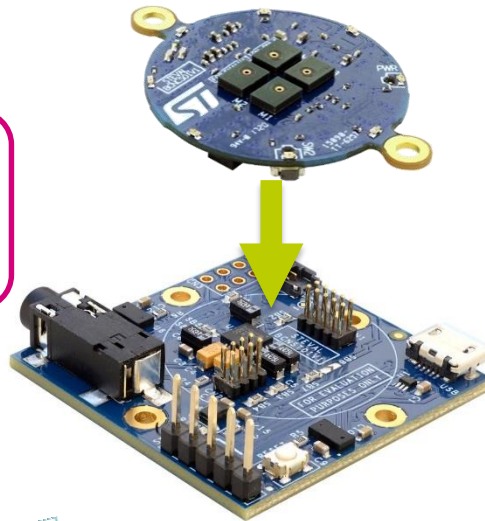
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The preloaded demo on BlueCoin Kit is the FP-AUD-SMARTMIC1

## Step 1

**Plug** the BlueCoin Core System on the CoinStation.

Pay attention to the alignment of the BlueCoin connectors



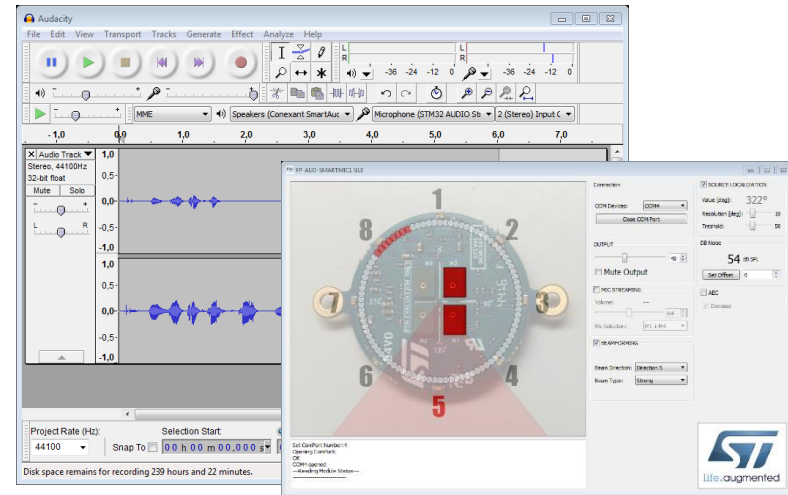
## Step 2

Connect it to the PC via **USB**



## Step 3

Run FP-AUD-SMARTMIC1 GUI, included in FP-AUD-SMARTMIC1 function pack available on [www.st.com/bluecoin](http://www.st.com/bluecoin)



Please refer to function pack documentation for more details about the software

# Example projects in source code

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## **STSW-BCNKT01** Starter Firmware

5 code examples for basic features:  
Audio\_SD, DataLog, AudioLoop,  
GestureDetect, BLE\_SampleApp

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## **FP-AUD-SMARTMIC1** Advanced Audio

Function Pack for advanced audio  
algorithms (Beamforming, SL, AEC)  
Works with dedicated PC Software GUI

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## **FP-AUD-BVLINK1** **FP-AUD-BVLINK2** Voice over BLE

Function Pack for Voice over Bluetooth  
Low Energy  
Works with dedicated Android or iOS app

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## **FP-SNS-ALLMEMS1** Algorithms and Connectivity

Function Pack for advanced sensing  
algorithms and BLE connectivity  
Works with dedicated Android or iOS app

# How to open the example projects

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## Step 1

Download the chosen project from [www.st.com/bluecoin](http://www.st.com/bluecoin)

Figures below refer to STSW-BCNKT01, same procedure can be applied to any of the provided example projects

## Step 2

Unzip the package on your PC

## Step 3

Open one of the projects examples with your favorite IDE

- ▷ AudioLoop
- ▷ BLE\_SampleApp
- ▾ DataLog
  - EWARM
  - Inc
  - MDK-ARM
  - Src
  - SW4STM32

→ IAR Embedded Workbench

→ ARM KEIL μVision IDE

→ System Workbench for STM32



- STSW-BCNKT01\_V1.0.0
  - \_htmresc
  - Documentation
  - ▷ Drivers
  - ▷ Middlewares
  - ▾ Projects
    - BlueCoin
      - Applications
        - ▷ AudioLoop
        - ▷ BLE\_SampleApp
        - ▷ DataLog
        - ▷ GestureDetect



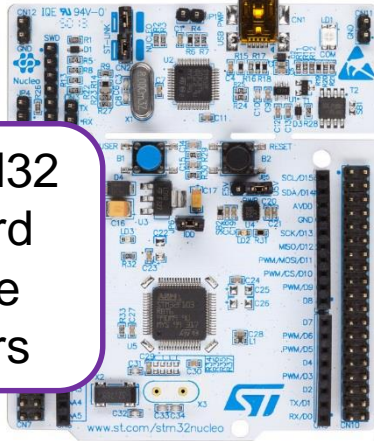


# Hardware setup for board programming

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## Step 1

Take an STM32 Nucleo board  
And remove  
CN2 jumpers



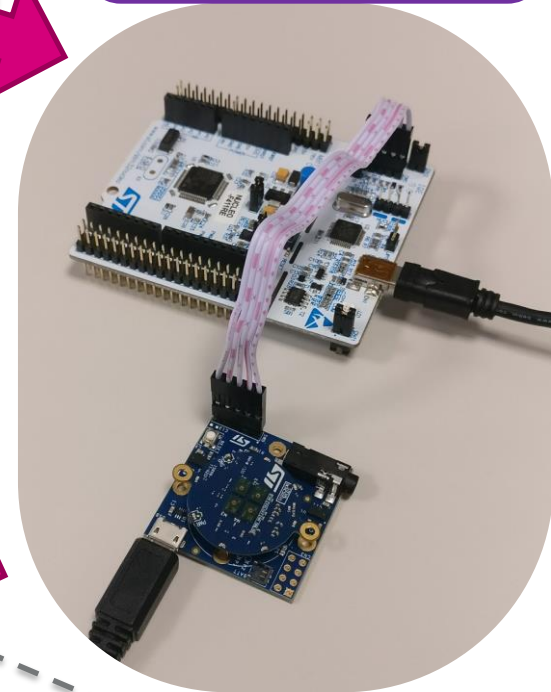
## Step 2

Plug the BlueCoin  
on top of the  
CoinStation



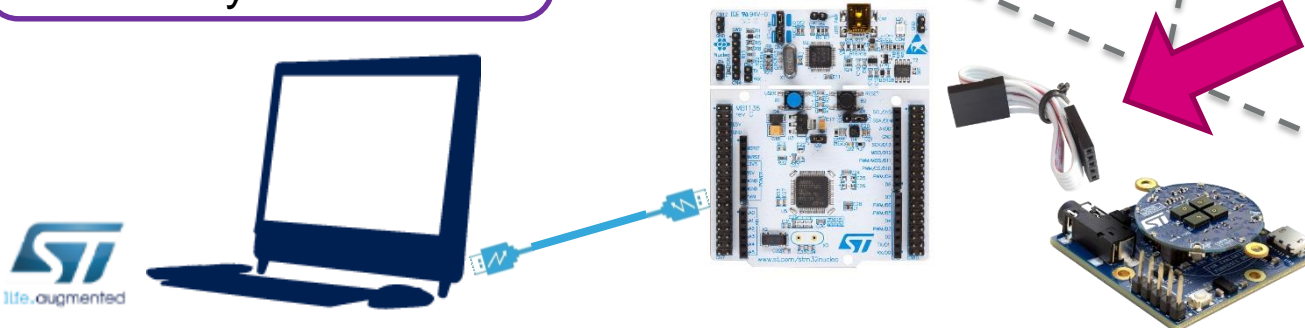
## Step 3

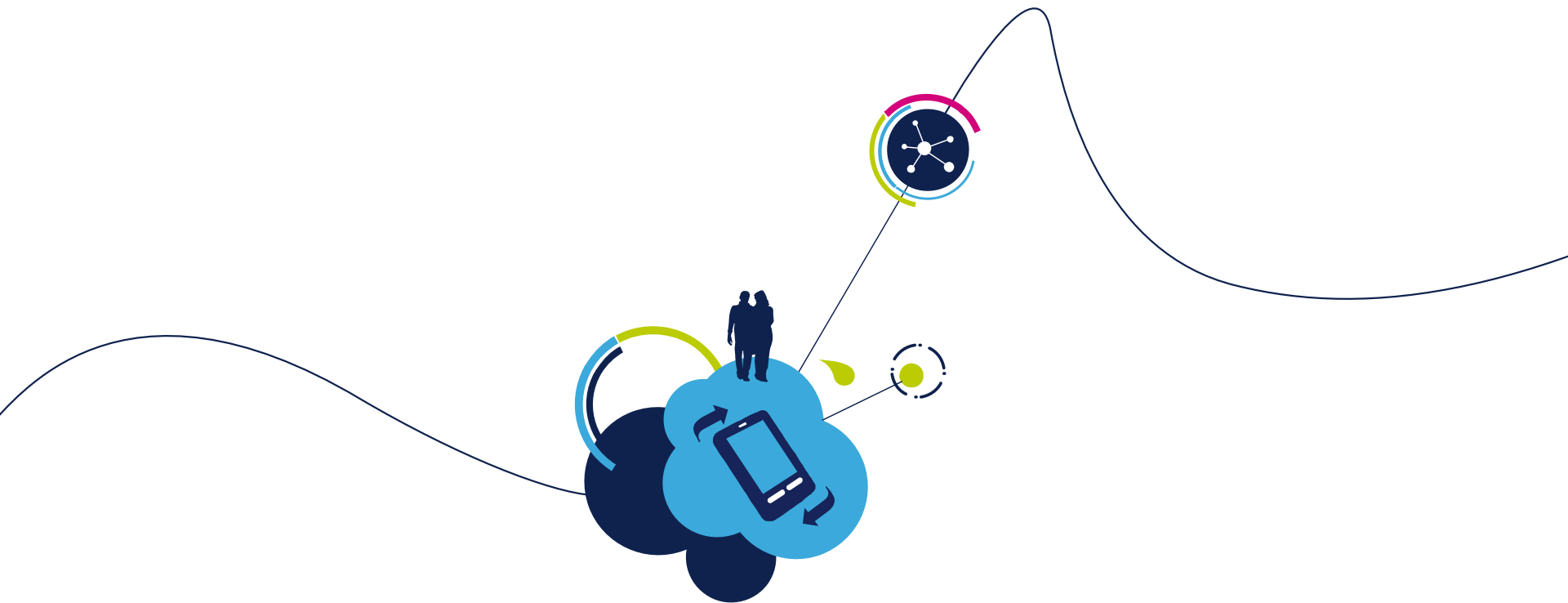
Connect the two  
boards with the  
provided flat cable



## Step 4

Connect to the PC and  
download the firmware  
with your IDE



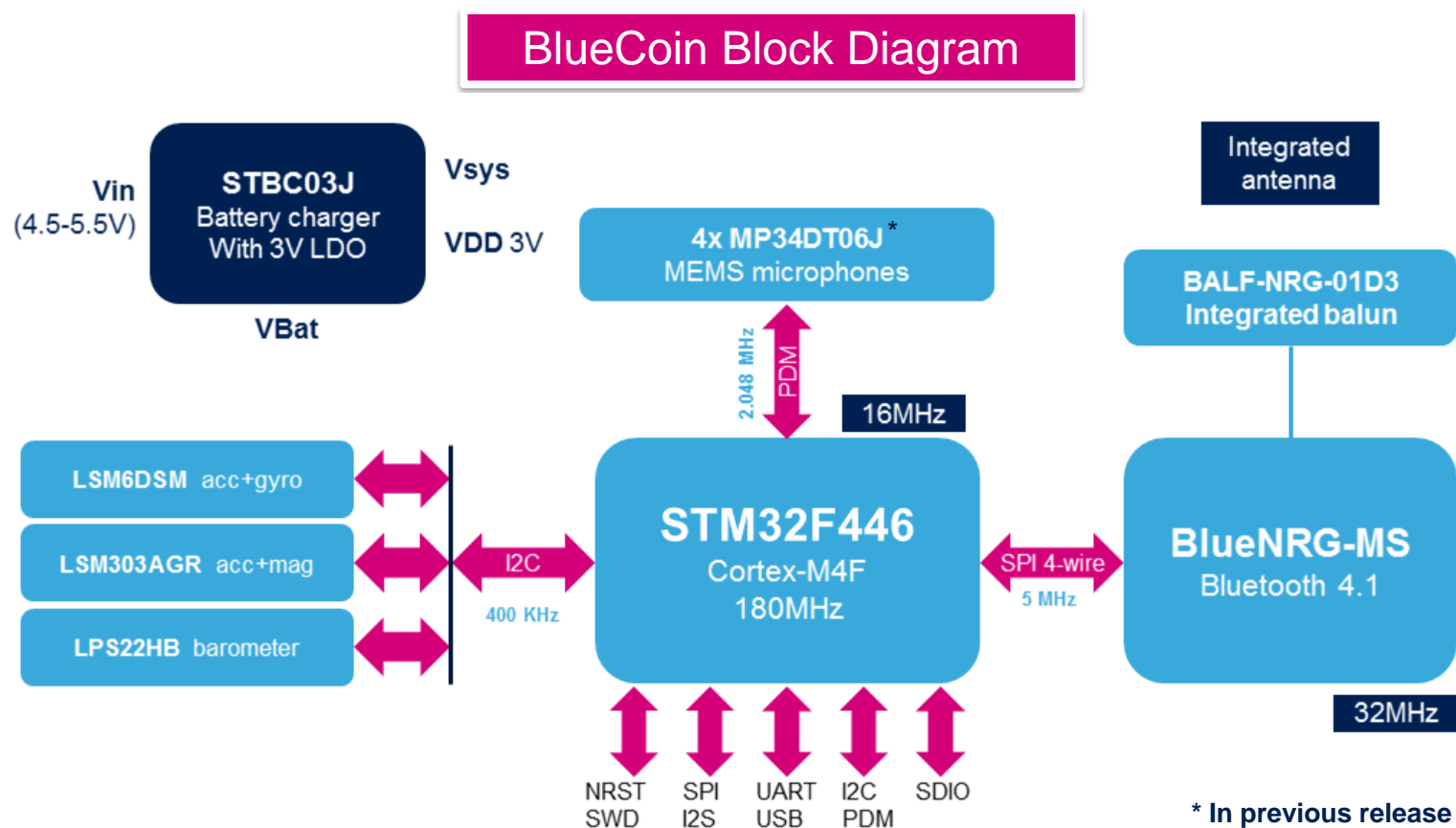


# More information

# BlueCoin Platform – Hardware overview

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- STEVAL-BCNKT01V1 is the starter kit for the BlueCoin board (STEVAL-BCNCS01V1), a highly Integrated Development Platform with a broad range of functionalities aiming to improve system design cycle and accelerate delivery of results
- Two host boards are also provided as part of the kit





# BlueCoin - The Robotic Ear

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## Core System: STEVAL-BCNCS01V1

### LSM303AGR

3DAcc+3DMag  
200 $\mu$ A @ 20 Hz (HR mode)  
Accel/Mag independent  
power down mode

### LPS22HB

Barometer  
1-75Hz, 3-12 $\mu$ A @ 1Hz

### 4x MP34DT06J \*

Digital MEMS Microphones  
64dB SNR, 120dBSPL

### LSM6DSM

3DAcc+3DGyro  
0.65mA @ 1.6kHz  
9 $\mu$ A @ 12.5Hz

### STM32F446

Cortex-M4  
up to 180MHz

### STBC03

Li-Ion linear  
battery charger  
with LDO

### Balun Filter

### BlueNRG-MS

Bluetooth low-energy  
Concurrent master/slave BT4.1

8 LEDs

25 mm

## CoinStation: STEVAL-BCNST01V1

Battery  
Connector

BlueCoin  
Connectors

USBLC6-2P6

ESD protection  
for USB

Expansion  
Connector

2x VL53L0X

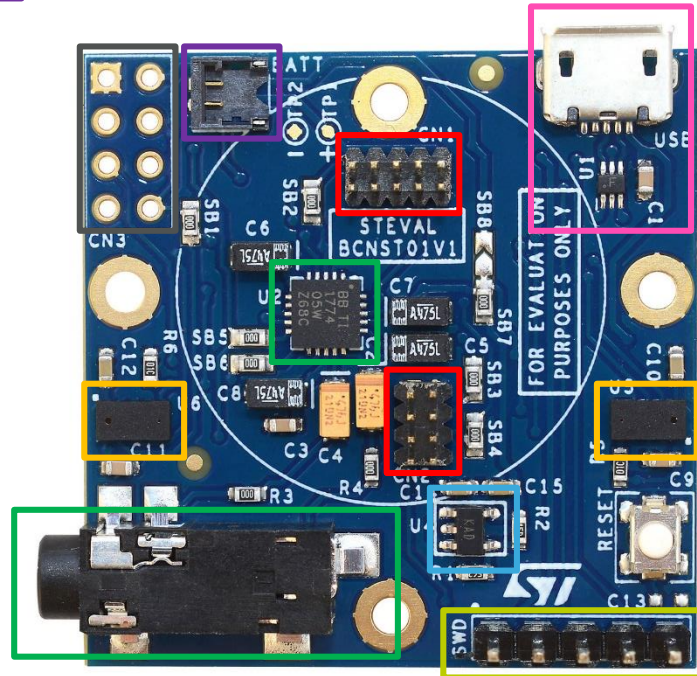
Time-of-Flight  
ranging sensors

Stereo Audio DAC  
and 3.5mm Jack

LDK120M

2.8V LDO

SWD  
Connector



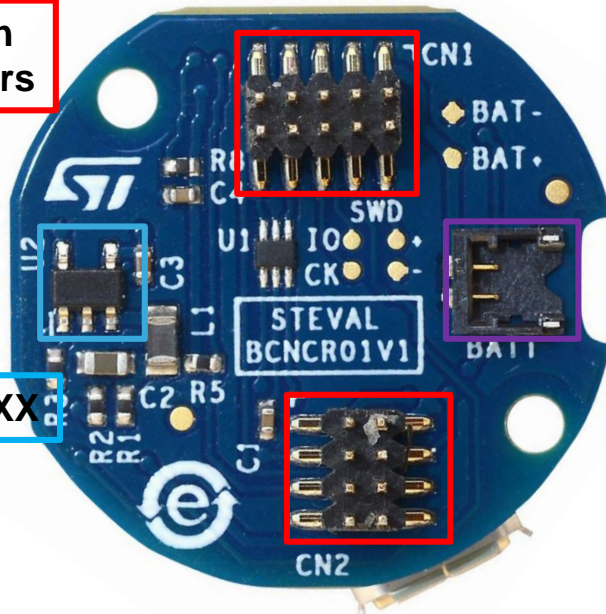
## BlueCoin Cradle: STEVAL-BCNCR01V1

### TOP VIEW

BlueCoin  
Connectors

Battery  
Connector

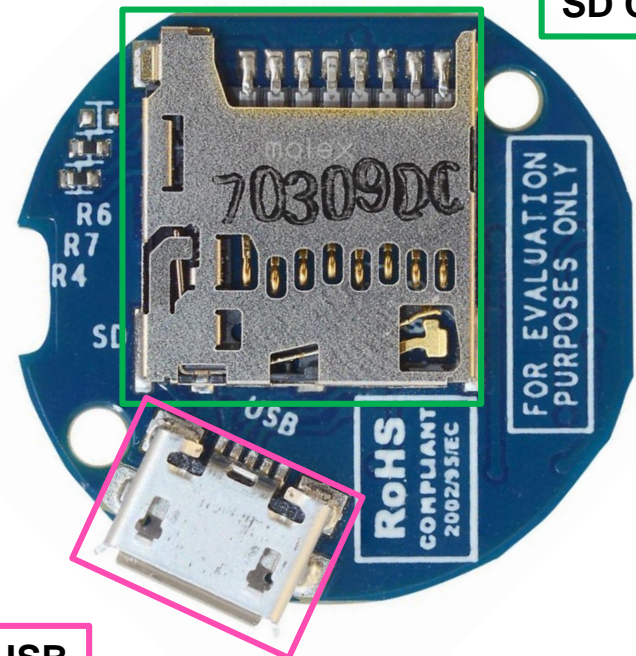
ST1S12XX



### BOTTOM VIEW

Micro  
SD Card

Micro USB

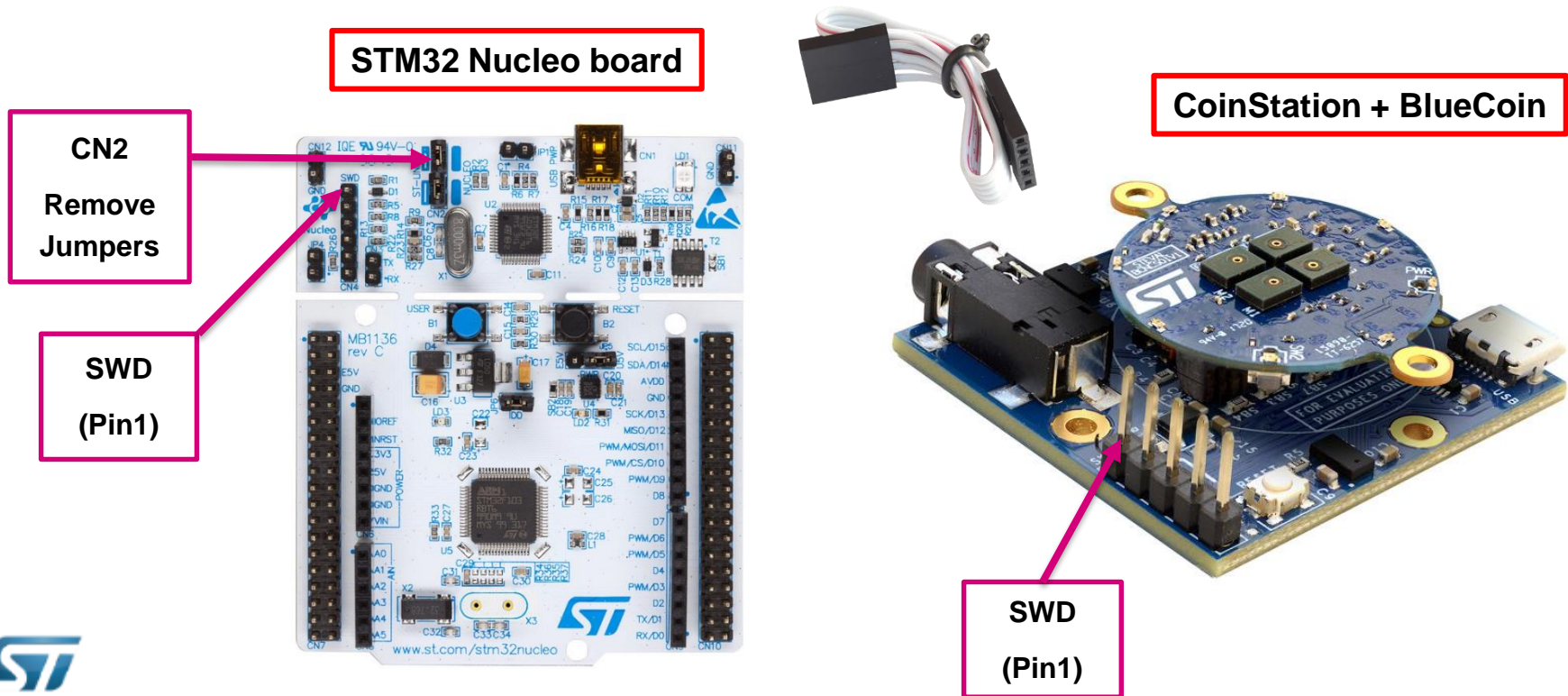




# BlueCoin Programming/Debugging

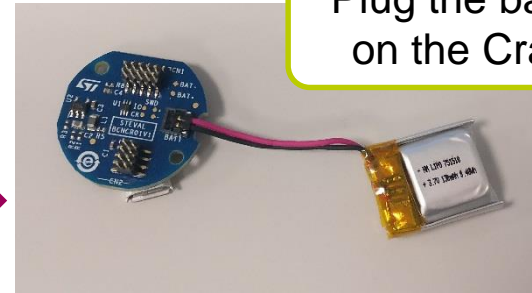
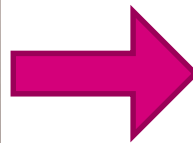
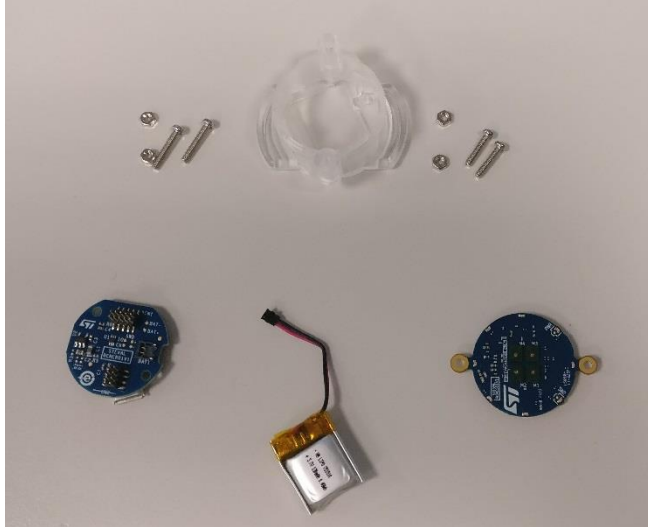
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- Connect an external ST-Link to the cradles SWD connectors. A 5pin flat cable is provided within the BlueCoin Starter Kit
  - The easiest way is to get an STM32-Nucleo board which includes an ST-Link V2.1
  - Remove CN2 Jumpers from the Nucleo Board
  - Connect the SWD interfaces using the provided cable



# How to assemble the portable demo

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Plug the battery  
on the Cradle



Fold the Battery below  
the cradle, insert in  
the plastic case and  
secure with the bolts

Plug the BlueCoin  
and secure with  
the bolts

