RUSHUP

Cloud-JAM board presentation

Developed by

Powered by

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Rome-IT

Product presentation

R&D Development process

1. Needs → Idea
2. Feasability → **Prototype**
3. Industrialization → **Engineering sample**
4. Validation → Product

Evaluation board & help from market…

…***FOR STEP 1 ONLY!***

A lot of open hardware and evaluation board that are PROTOTYPE ACCELERATOR ***but***, how to move fast to product also?

RUSHUP: PRODUCT ACCELARTORS

RUSHUP creates PRODUCT ACCELERATORS and is the answer when makers, developers and high mix low volume industry want to turn on in a fast way the idea in a product!

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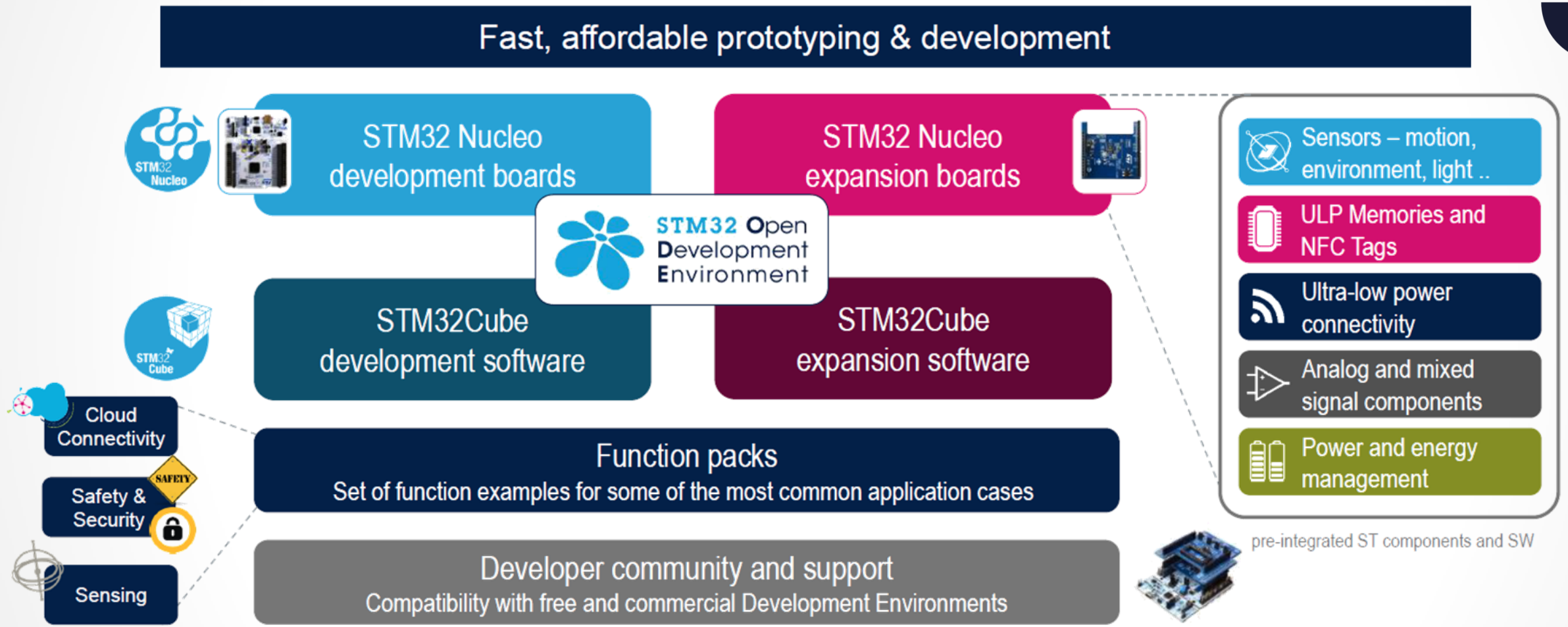
STM32 Open Development Environment



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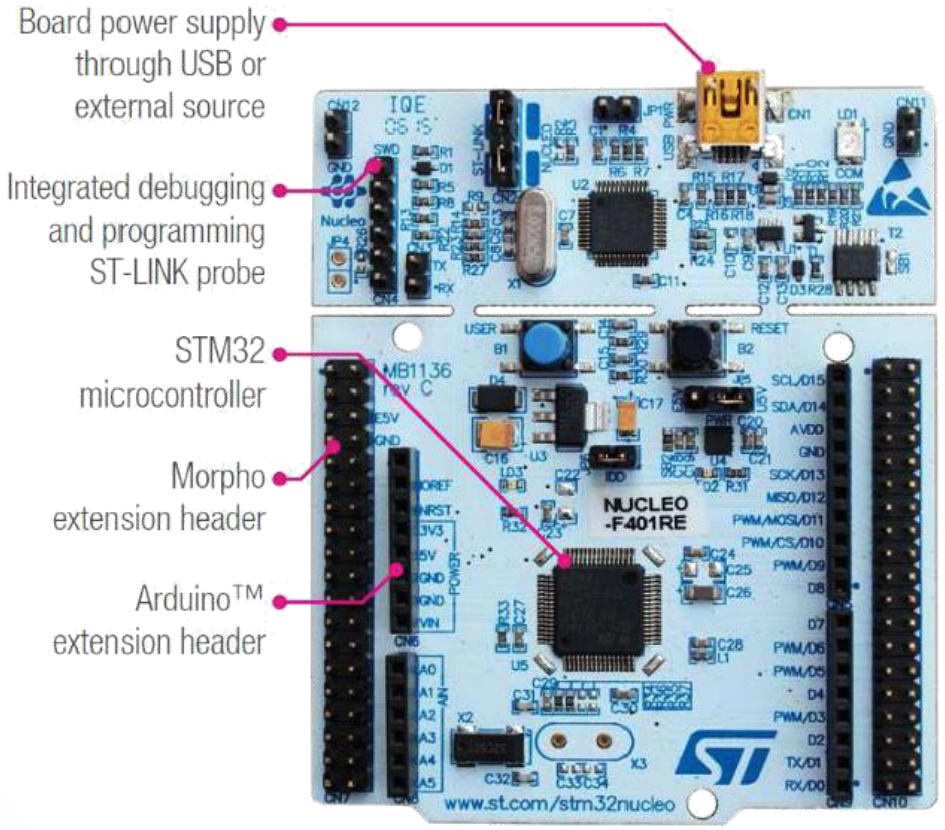
www.st.com/stm32nucleo

STM32 Nucleo Development Boards

A comprehensive range of affordable development boards for all STM32 microcontroller series, with unlimited unified expansion capability, and with integrated debugger/programmer



STM32 F0 STM32 F1 STM32 F2 STM32 F3 STM32 F4 STM32 F7

STM32 L0 STM32 L1 STM32 L4

Complete product range
from ultra-low power to high-performance

STM32 Nucleo

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www.st.com/x-nucleo

X-Nucleo family overview

27 expansion boards (and growing…) covering all the key functions

Sense (4)	Connect (8)	Power Drive (2)	Move Actuate (10)	Translate (3)
Motion & environmental sensors	BLE	Power management	Motor drive	Audio amplifier
Proximity sensor	Wi-Fi	LED Boost	Actuator	OpAmp
Microphone	Sub-GHz			
	NFC			

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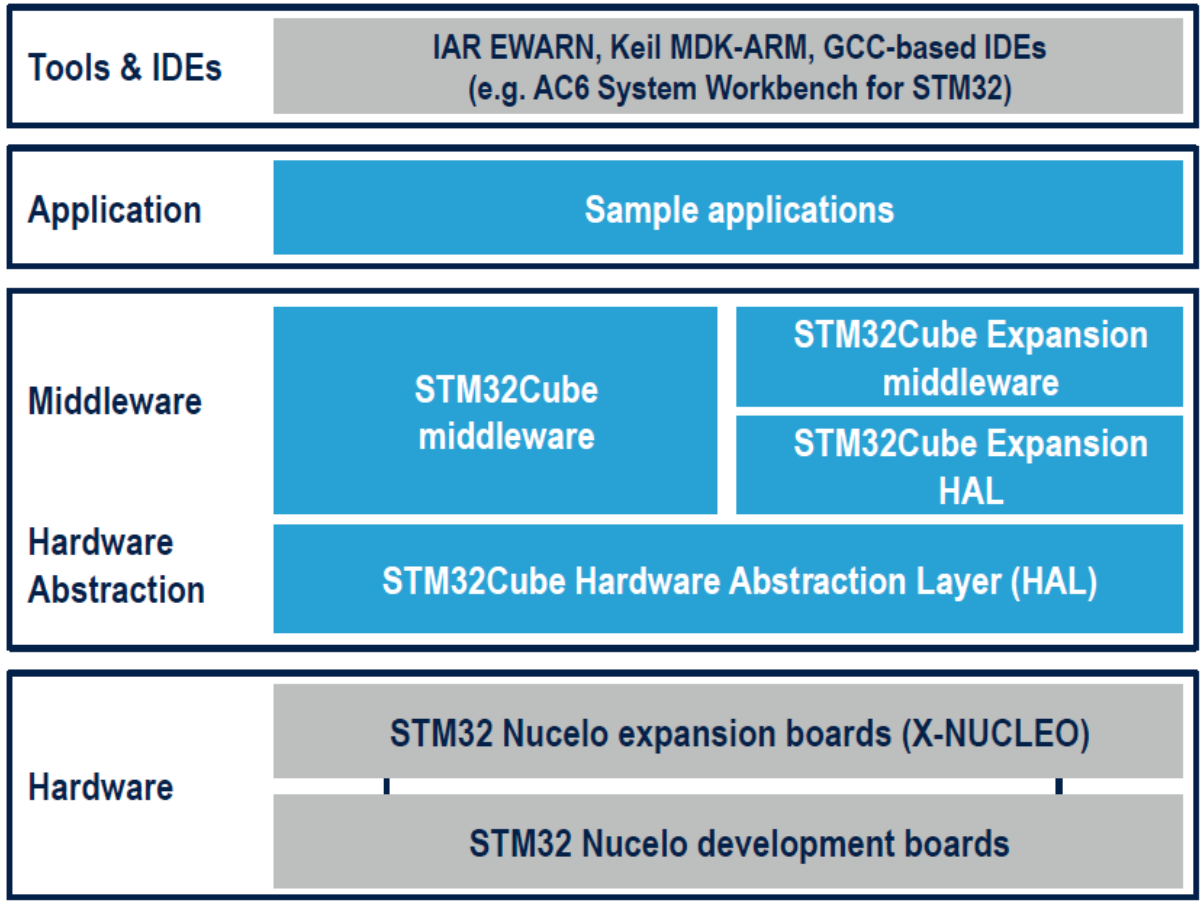
STM32 ODE X-CUBE packages



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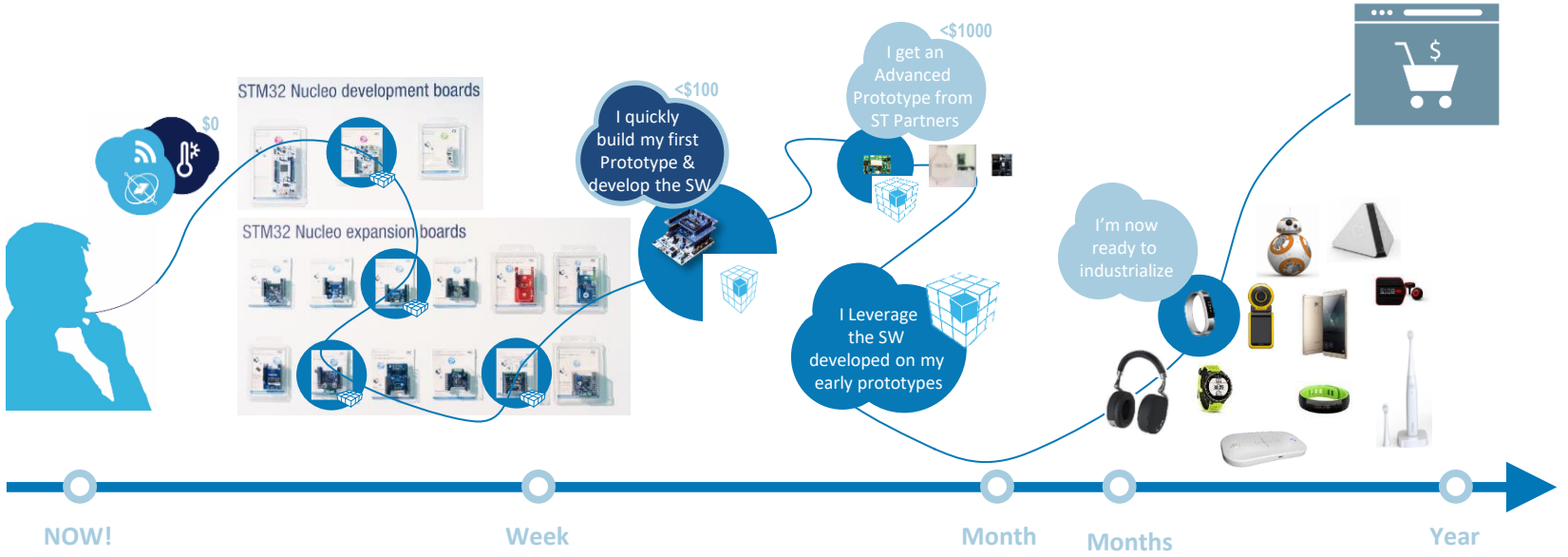
Development Environment

How to simplify the Industrialization journey: **From the Idea to the Product**

New Key Message



Idea

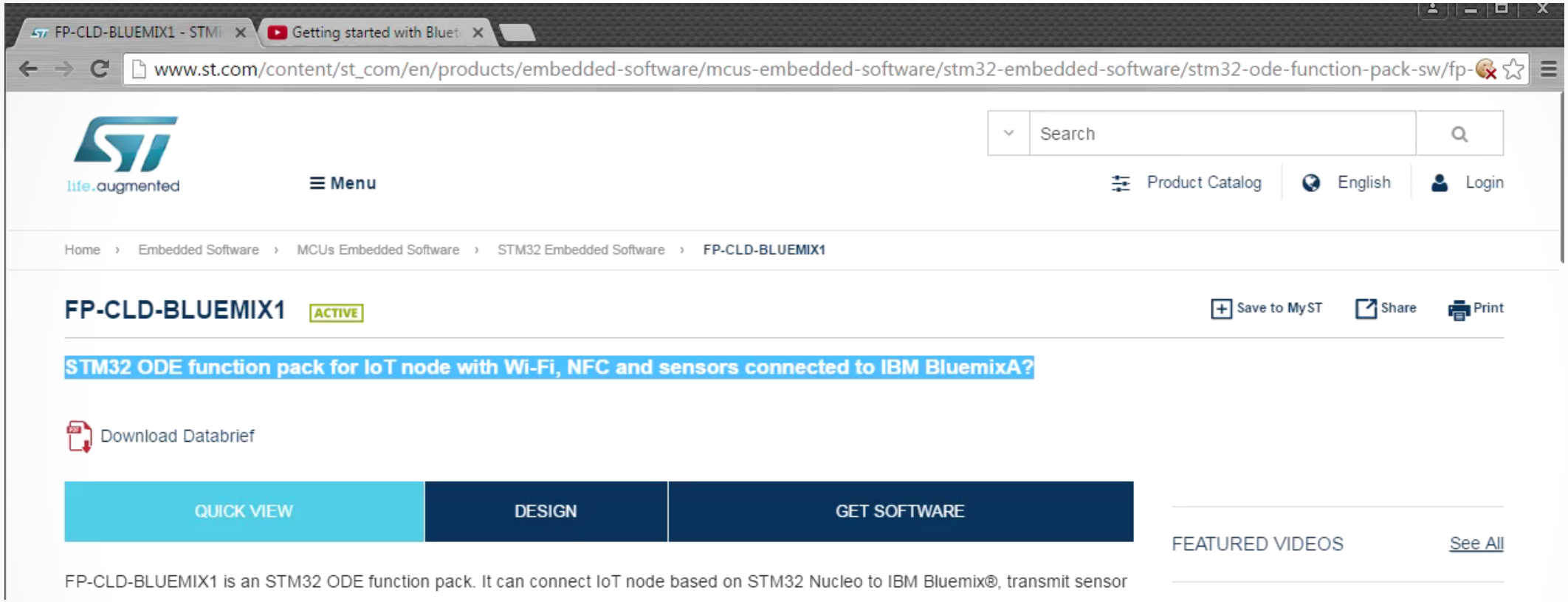
Choose components: STM32 ODE development & expansion boards

Build first prototype (HW & SW) and can leverage STM32 ODE Function Packs

Advanced prototype using ST or ST partners Integrated Boards

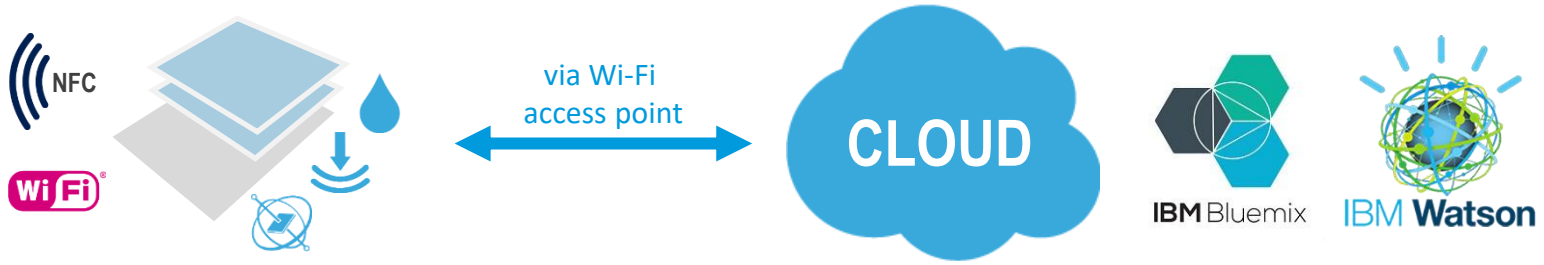
Finalize the project: ready for industrialization / commercialization

STM32 ODE Function Pack for IBM Bluemix



STM32 ODE Function Packs: set of function examples for some of the most common application cases built by leveraging the modularity and interoperability of STM32 Nucleo, development boards and expansions, with STM32Cube software and expansions

FP-CLD-BLUEMIX1



What it is

IoT node with motion and environmental sensor, NFC tag, connecting to the IBM BlueMix/Watson Cloud via Wi-Fi.

Nucleo expansion boards

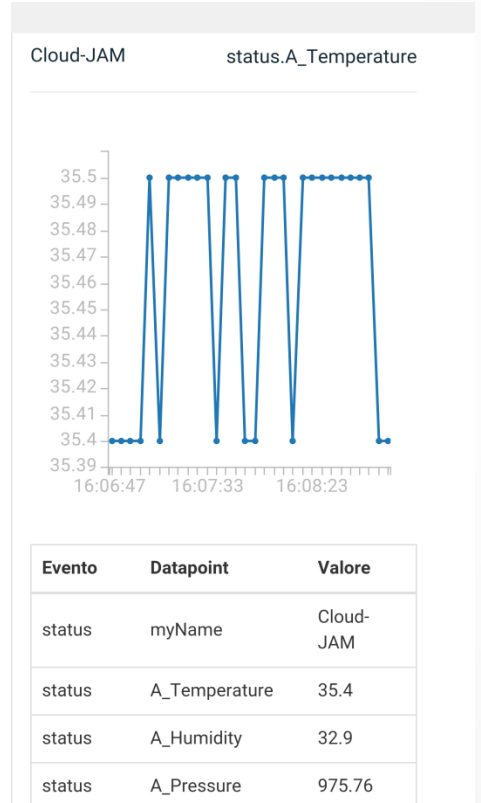
X-NUCLEO-IDW01M1

X-NUCLEO-IKS01A1

X-NUCLEO-NFC01A1

CLOUD-JAM: APPLICATIONS & CONNECTIONS

First member of the JAM family the Cloud application board allows you to connect the motion & environmental sensors to the cloud throught Wi-Fi network using SSID, PASSWORD and web authentication stored in the dynamic NFC.



Application ready with this functional pack in IBM Bluemix: https://developer.ibm.com/recipes/tutorials/stm32-modular-sensors-node-connected-with-ibm-bluemix/

This board can be conneted to the main cloud repositories also, like: Artik Cloud, Microsoft Azure, ecc. ecc.

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JAM BOARDS: NUCLEO COMPRESSION

What it is

Motion & environmental sensors board connected to the cloud through Wi-Fi network using SSID, Password and web authentication stored in the dynamic NFC.

Nucleo prototyping boards

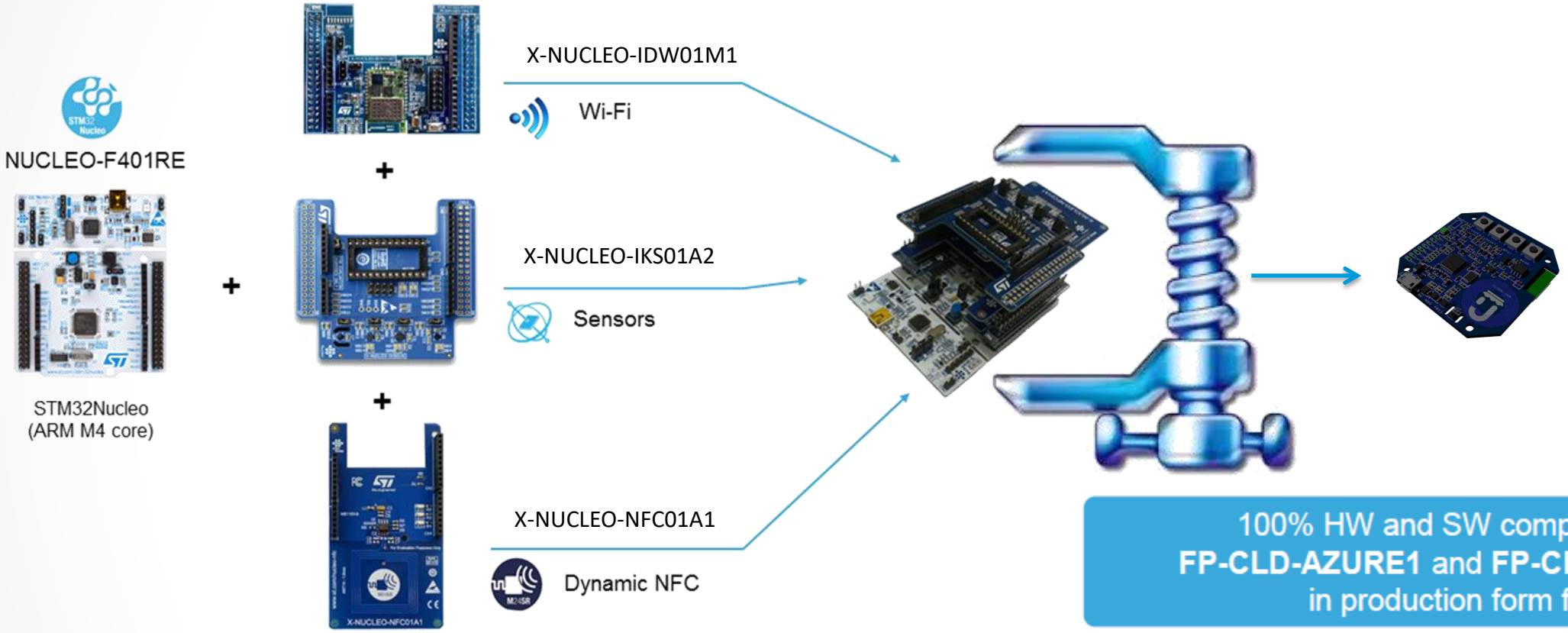
NUCLEO-F401RE

X-NUCLEO-IDW01M1

X-NUCLEO-IKS01A2

X-NUCLEO-NFC01A1

CLOUD-JAM



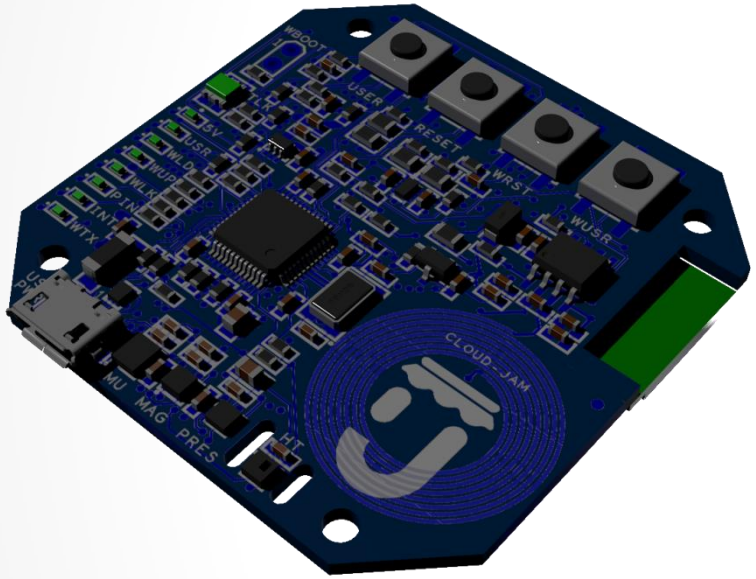
100% HW and SW compatible with
FP-CLD-AZURE1 and **FP-CLD-BLUEMIX1**
in production form factor

Idea → Product

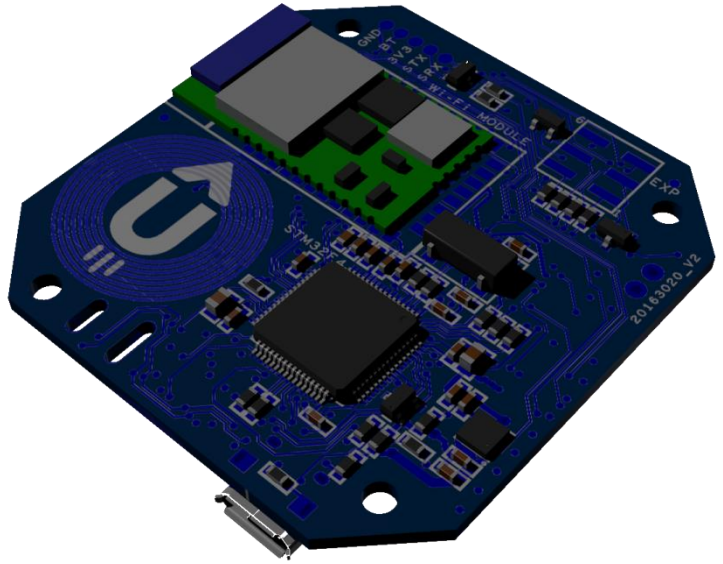
Prototype

Engineering
Sample

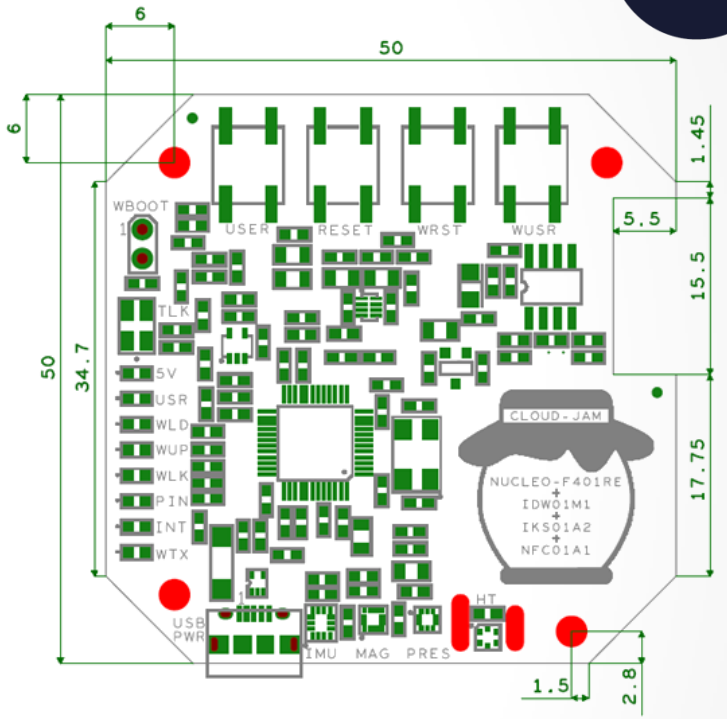
CLOUD-JAM: the board



TOP

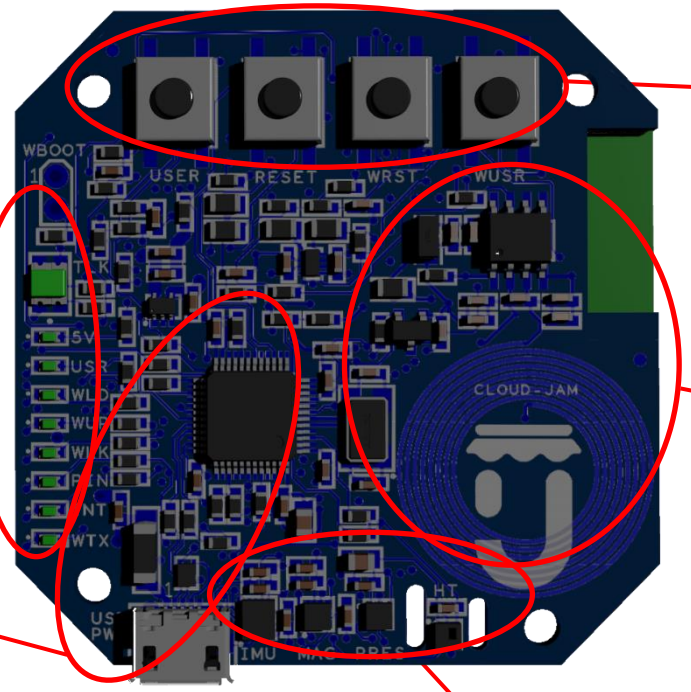


BOT



MECH

CLOUD-JAM: Visible specs on TOP



Nucleo &
Shields push
buttons

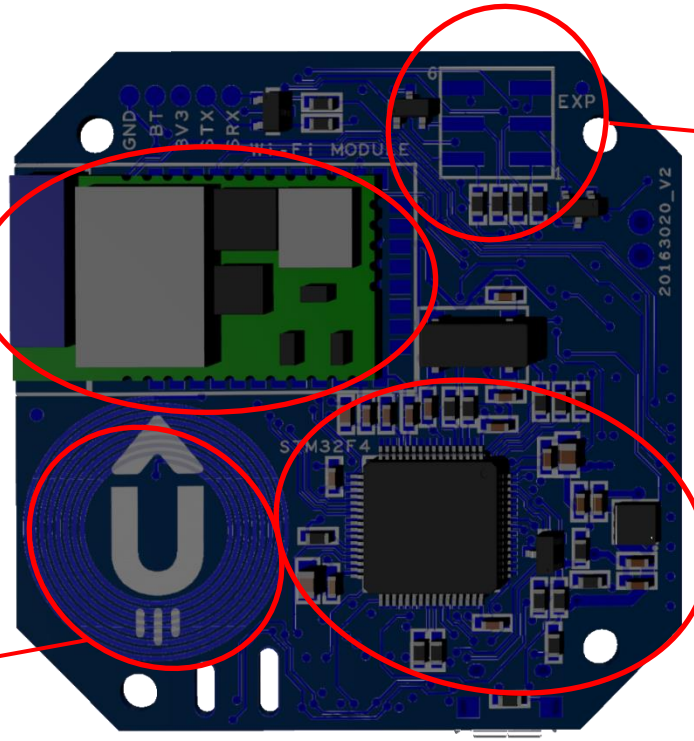
Nucleo &
Shields LEDs

NFC
M24SR64

ST-LINK V2
& POWER

Motion &
Environmental sensors.
LSM6DSL, LSM303AGR,
LPS22HB, HTS221

CLOUD-JAM: Visible specs on BOT



Wi-Fi
SPWF01SA-11

Expansion connector: UART, I2C and power

NFC antenna

Nucleo-F401RE

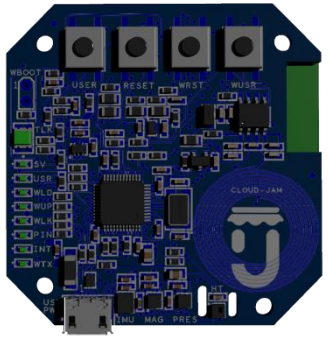
CLOUD-JAM: FW/SW PLUG & PLAY!

The firmware developed on Nucleo & Shields (functional pack) is perfectly compatible and then uploadable in Cloud-JAM board.

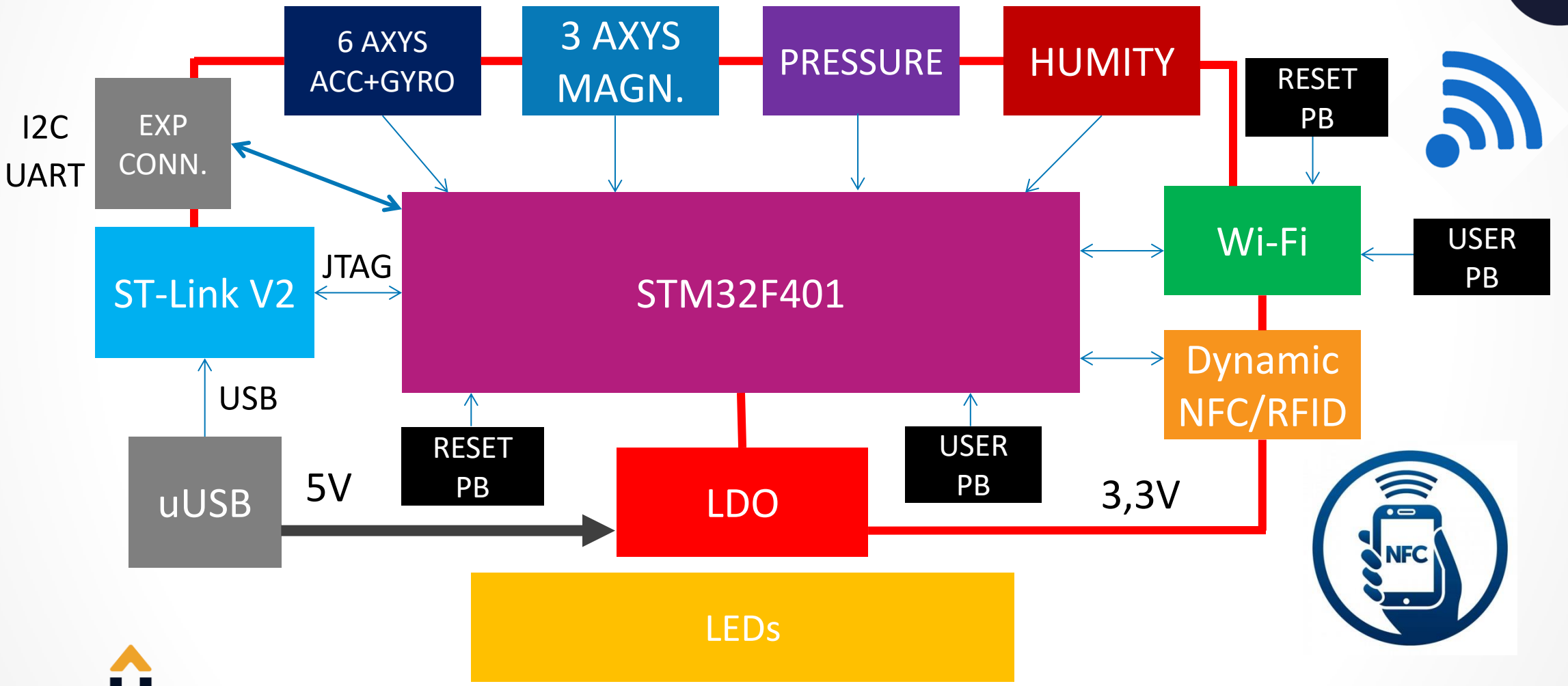
The output of nucleo work (.bin file) is the input of the JAM board!

NO FW DEVELOPMENT NEEDED

.bin



CLOUD-JAM: HW block diagram



CLOUD-JAM: HW FEATURES

- 5V power supply from USB connector (micro type) 5V/0,5A max
- **ST-Link V2** integrated
- **STM32F401RET6** microcontroller.
  - ARM Cortex-M4 with DSP & FPU, 512kB FLASH, 96kB SRAM, 84MHz CPU, ART accelerator.
- **HTS221**. Capacitive digital sensor for relative humidity and temperature.
  - 0.004% rH/LSB, ± 0.5°C 15 to +40 °C, ± 3.5% rH 20 to +80% rH. 16-bit humidity and temperature output data.
- **LPS22HB**. MEMS nano pressure sensor.
  - 260-1260 hPa absolute digital output barometer.
- **LSM6DSL**. iNEMO inertial module: 3D accelerometer and 3D gyroscope.
  - Compliant with Android K, L, and M. ±2/±4/±8/±16 g full scale and ±125/±245/±500/±1000/±2000 dps full scale. Pedometer, step detector and step counter & significant motion and tilt function.
- **LSM303AGR**. Ultra-compact high-performance eCompass module.
  - ultra-low power 3D accelerometer and 3D magnetometer. 3 magnetic field channels and 3 acceleration channels, ±50 gauss magnetic dynamic range, ±2/±4/±8/±16 g selectable acceleration full scales in 16-bit data output. Embedded self-test and temperature sensor. Programmable interrupt generators for free-fall, motion detection and magnetic field detection.
- **SPWF01SA-11**. 2.4 GHz IEEE 802.11 b/g/n transceiver
  - Integrated TCP/IP protocol stack. WEP/WPA/WPA2 personal security. System modes: Station, IBSS, and miniAP easily provisioned (SSID, PWD). Fast Wi-Fi reassociation after reset. Simple AT command set host interface through UART. FCC/CE/IC/SRRC certified.
- **M24SR64-YMN6**. 64-Kbit Dynamic NFC / RFIDtag
  - NFC Forum Tag Type 4 and I2C interface. ISO/IEC 14443 Type A, 106 Kbps data rate. 200 years data retention.
- **4 push buttons**.
  - 1 for MCU reset, 1 for Wi-Fi module reset, 1 for MCU user and 1 for Wi-Fi user.
- **9 LEDs** for MCU, Wi-Fi and sensors feedback.
- **50x50mm** mechanical form factor **6mm thickness** with cut corners and mounting holes.

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CLOUD-JAM: PRODUCT ACCELERATOR BENEFITS

Developer's view

Ideal for first low-volume trials or productions for customers

- Zero effort and time spent for transition from prototype to deployment!
- I can demonstrate final form factor and have a first batch of production in no time!
- Ready off-the-shelf solution at the right price
- no skills needed or no ROI to justify to develop own board

- Zero SW development costs & time!
- Zero SW support costs & time for the standard SW package!
- Fast & inexpensive development cycle but high potential returns!
- Implicit promotion by the STM32 ODE
- Low volumes but with very high market base – thousands of potential customers

Opens door for further opportunities

- If I need a fast modification or design service, I have professional and skilled support at hand
- If a want to scale up production volume, I can make optimized deals

- Possibility to promote design customization skills
- A sizable part of the trials/small production customers can grow exponentially very soon

Partner's view

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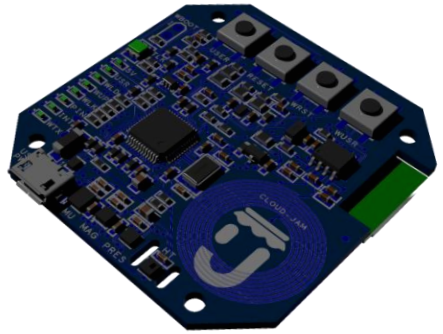
Thanks, now demo!



RushUp: Product accelerators!