

Introduction to SensorTile.box

ST MEMS & Sensors training, Italy, November 2019



Order Code: STEVAL-MKSBOX1V1

SensorTile.box

Preview

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An Out-of-the-Box Experience
for many users

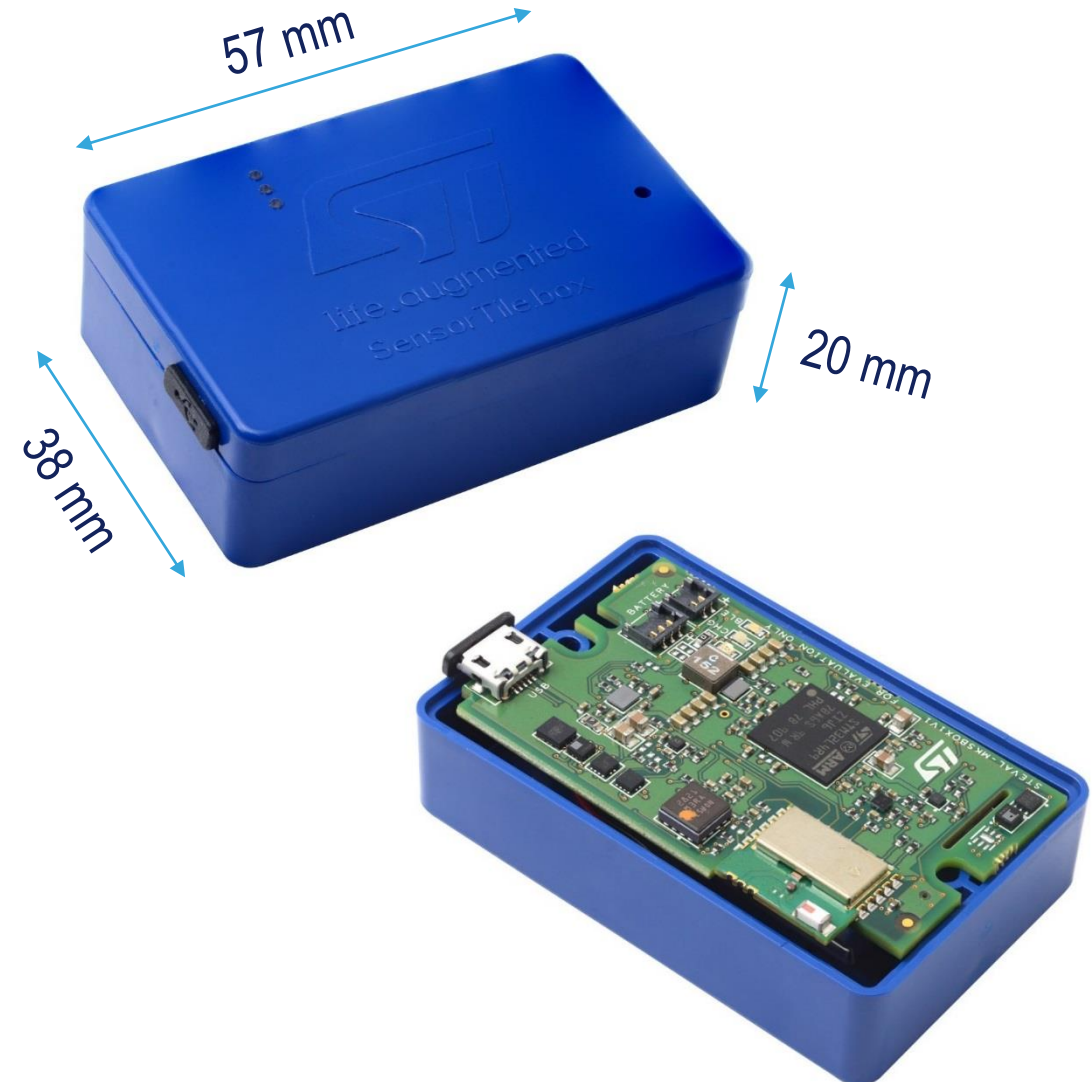
3 Operational Modes:
Entry, Expert, Pro

Inside the SensorTile.box
Sensing, Processing and Connectivity



Meet the Product 3

- Compact casing, IP54-compliant
57 x 38 x 20 mm (L x W x H)
- 500 mA-h Li-Po battery
- 8 GB μ SD card as mass memory
extendable to 64 GB
- Compatible with “ST BLE Sensor” app
Available on Google Play and App Store





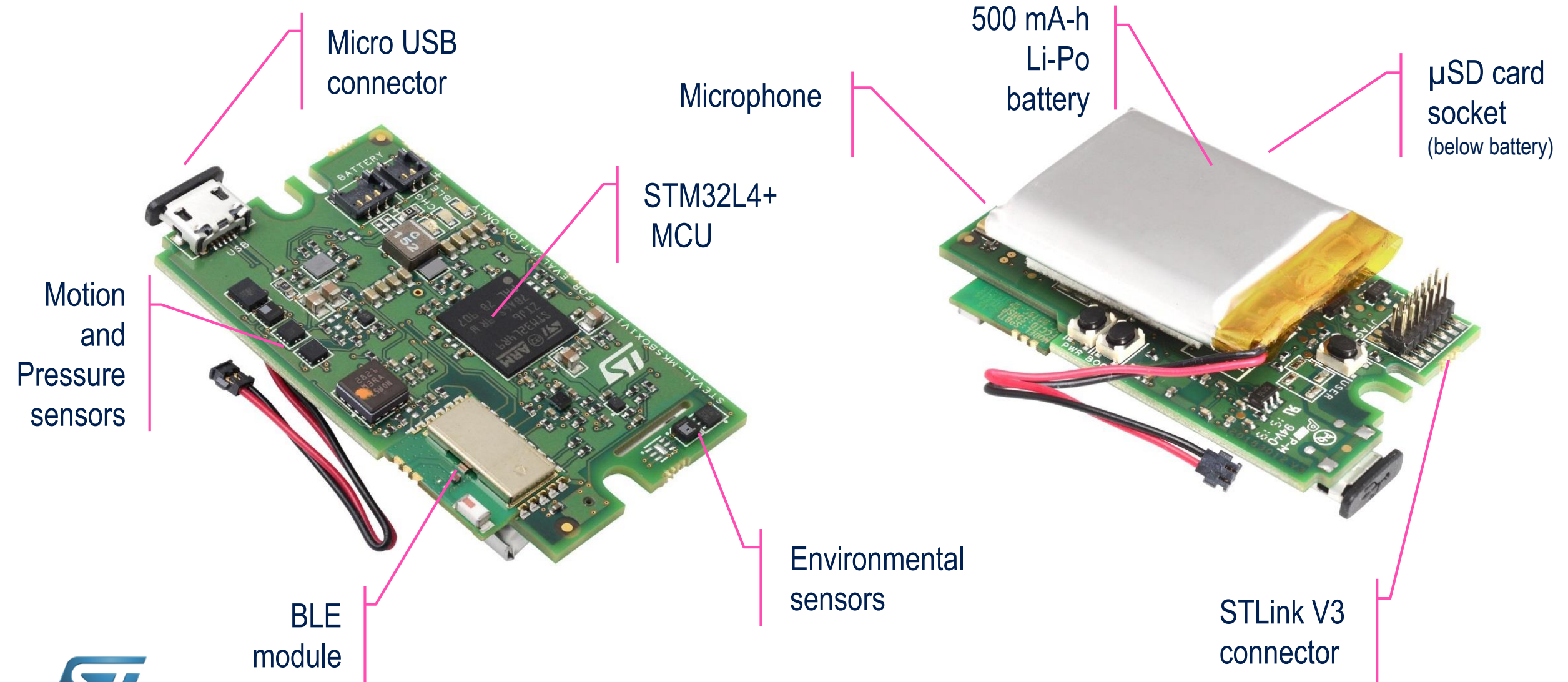
Blister with quick starting guide

SensorTile.box

Additional back with fixing points



The Board 5



Inside the SensorTile.box

Sensing, Processing and Connectivity

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Motion Sensors



Low-power 6-axis IMU,
embedding Neural Network
LSM6DSOX



High-performance and low
power accelerometers
LIS3DHH & LIS2DW12



Magnetometer
LIS2MDL

Environmental Sensors



Altimeter / Pressure sensor
LPS22HH



Accurate temperature sensor
STTS751



Humidity sensor
HTS221



Analog wide-band microphone
MP23ABS1

Processing



STM32L4 low-power MCU
STM32L4R9ZIJ6

Connectivity



Bluetooth Low Energy Module
SPBTLE-1S

Power management

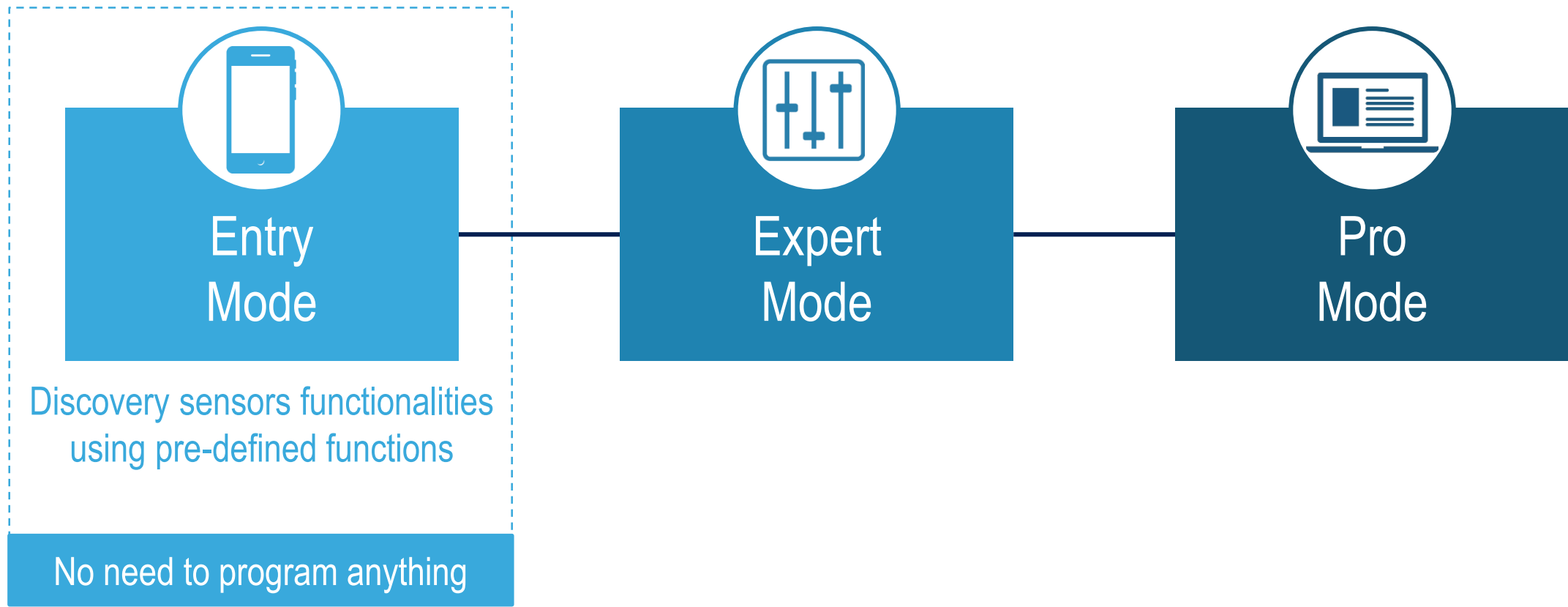


Battery charger
STBC02



Many users, many modes 7

SensorTile.box has 3 operational modes





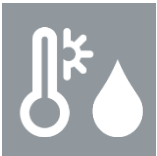
Entry Level Mode

No Need to Program Anything

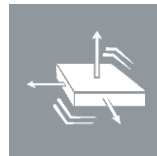
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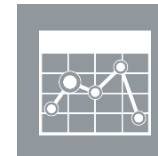
- Out-of-the-box SensorTile.box connects to a smartphone
- The user access the predefined applications included in the provided Android / IOS app



Barometer and
Temp/Humidity



Vibration
monitoring



Data recorder
(on SD card)



Compass &
Level



Pedometer



Sensor Fusion
(quaternions)



Human Activity
Recognition



Baby crying
detection*

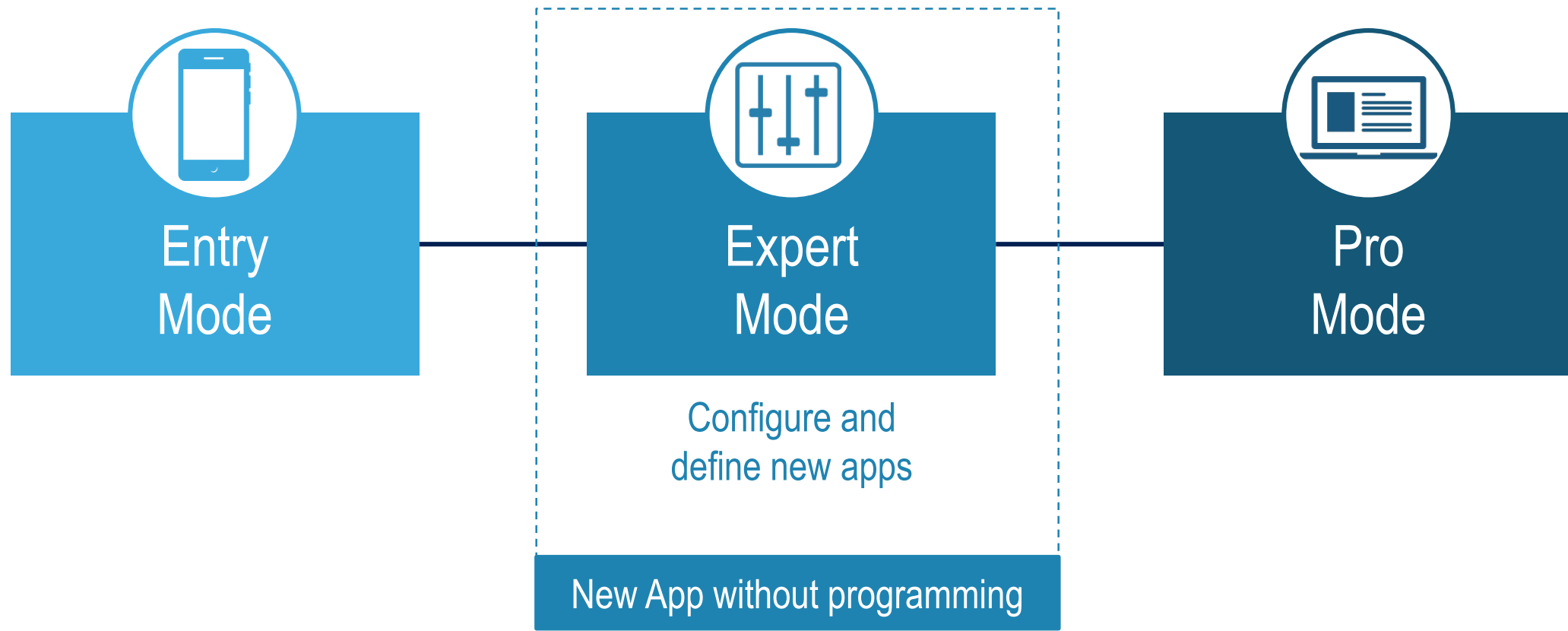
*AI based

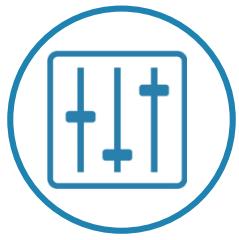


Many users, many modes

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SensorTile.box has 3 operational modes





Expert Working Mode

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The developer uses a graphical app on his smartphone to

- Define additional applications, like in lego bricks
- Build his own application, without programming

Some examples of
configuration in
Developer mode

Power optimization

Individual sensors can be **activated or shut down** to enable only the required sensor set

Hard-iron compensation, offset cancelling

SensorTile.box can be **individually calibrated** after final assembly & positioning

Pattern recognition, accuracy

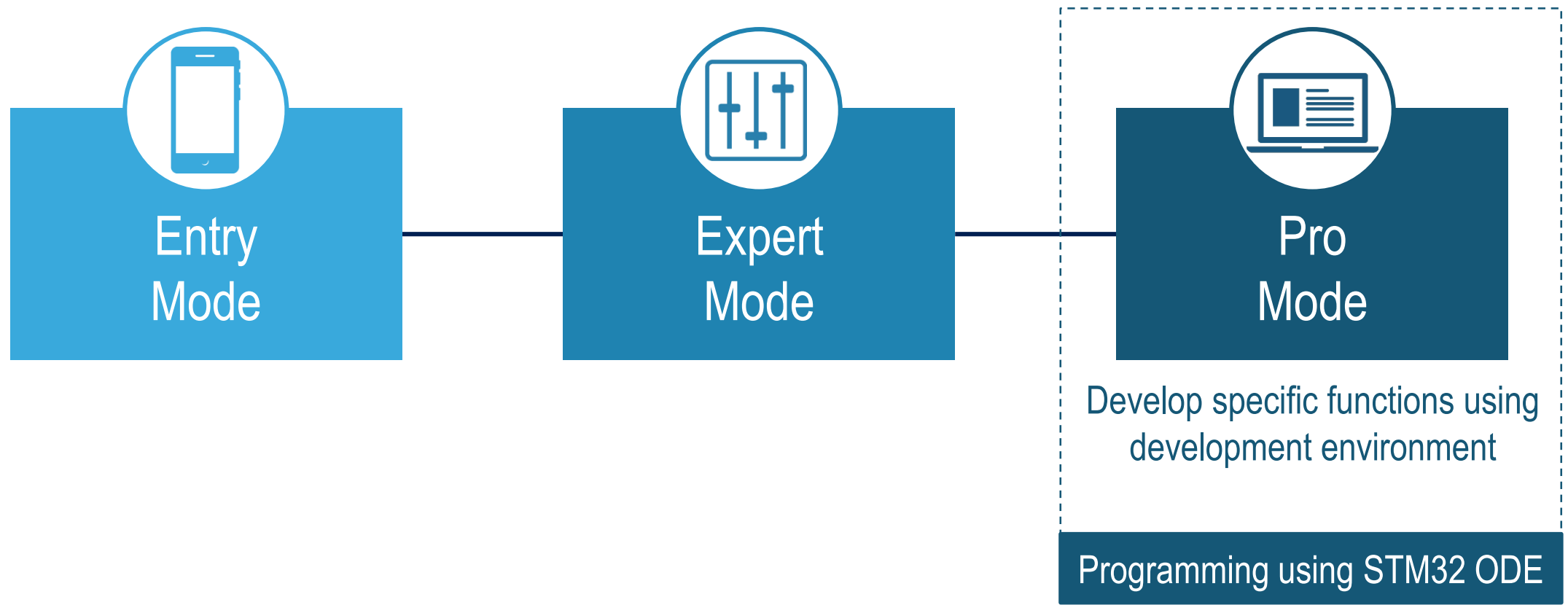
Neural network and dedicated **sensor fusion** options can be activated



Many users, many modes

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SensorTile.box has 3 operational modes





Pro Working Mode

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Full compatibility and support of STM32 Open Development Environment

Full Cube.MX compatibility

FP-SNS-STBOX1 (including MLC) and FP-AI-SENSING function packs available

STLink V3 programming and debug compatibility (with level shifter to 1.8V)



Many Modes, Many Users

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Users with no
programming skills

Allows potential customers with no programming capabilities to have an «out-of-the-box» sensor trial platform

E.g.: Non-engineering companies willing to develop IoT-related use cases



System integrators
& Developers

Availability of integrated compact platform embedding high-performance sensing and processing capabilities



Cloud developers

To experiment several functions with sensors and application programming



Education

Easy access to sensors technology and ability to move from simple mode to programming





Thank you!