

LETTING EVERYTHING SENSE

PANDLETS



ACTIVITY MONITORING
FALL DETECTION
SPORTS TRACKING



TASK LEARNING
WORK ERGONOMICS



APPLIANCE CONTROL
USAGE MONITORING

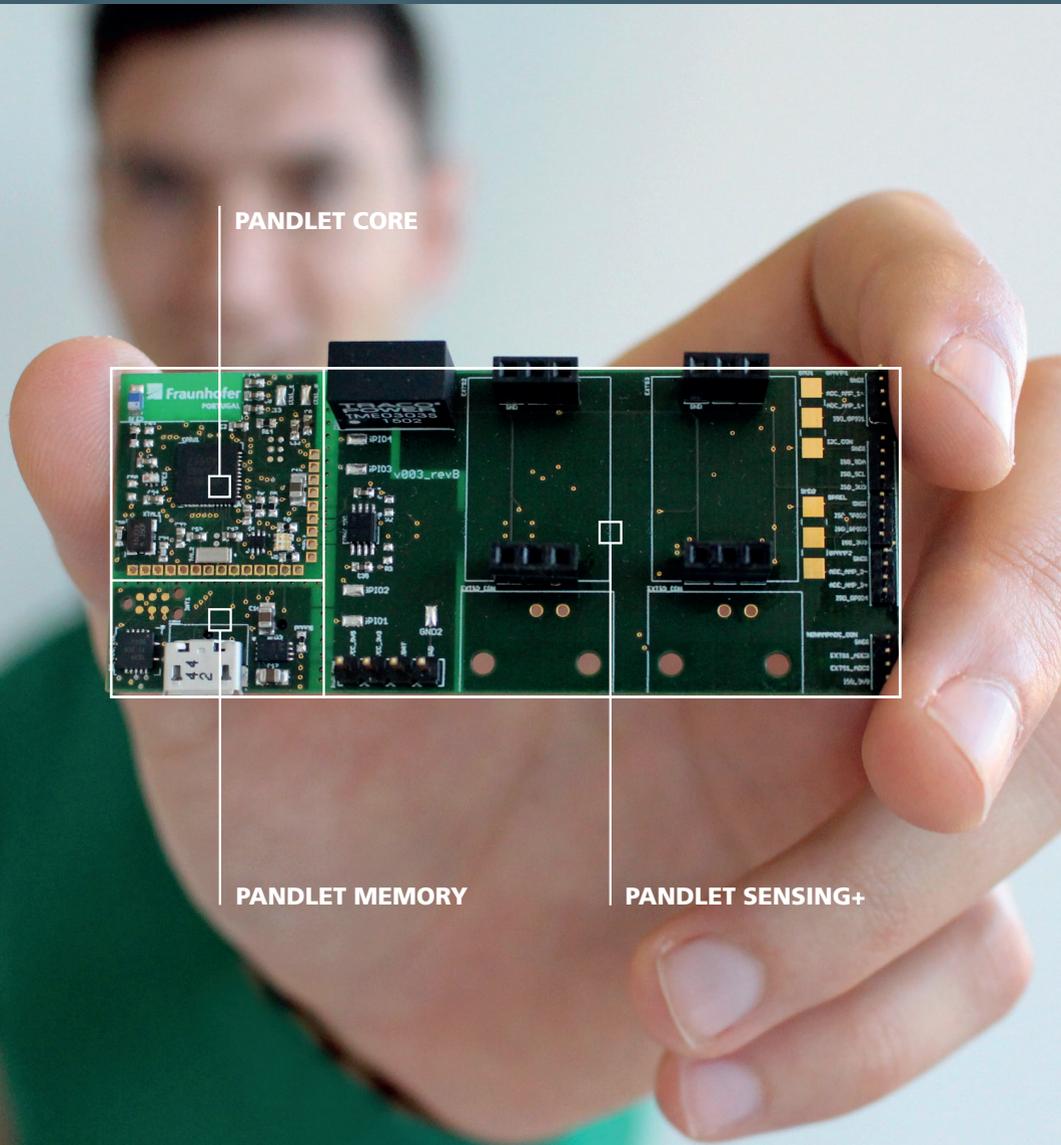


WIRELESS CHARGING
SMALL FORM FACTOR

PANDLETS IS A HARDWARE PLATFORM DEVELOPED TO MEASURE HUMAN BEHAVIOR AND ENVIRONMENTAL CONTEXT. IT INCLUDES A SET OF SENSING CAPABILITIES AND AN ANDROID API THAT ALLOWS FOR SEAMLESSLY INTEGRATION OF EXTERNAL HARDWARE INTO ANDROID'S PLATFORM.



SENSING MECHANISMS FOR PRECISION AGRICULTURE



PANDLET CORE

PANDLET MEMORY

PANDLET SENSING+

Hardware Framework

The modules created with the pandlets hardware framework are composed by a set of building blocks (dots) that when “glued” together create new devices and functionalities.

The base dot needed in any device is the pandlet CORE, which contains: a Bluetooth 4.0 interface; a 16MHz ARM M0+ processing unit; support for Qi wireless charging; and Inertial (IMU) and Environmental (EMU) Measurement Units.

Regarding the measurements units, the IMU contains three inertial sensors: (1) a accelerometer with 16 bits resolution, 4 kHz sampling rate and 2 to 16 g range; (2) a gyroscope with 16 bits resolution, 8 kHz sampling rate and 250 to 2000 %/s range; and (3) a magnetometer with 14 bits resolution, 100 Hz sampling rate and 4900 μ T range. The EMU also contains three sensors: (1) a humidity sensor with 20 bits resolution, 1 Hz sampling rate and a range of 0 to 100% of

relative humidity; (2) a pressure sensor with 20 bits resolution, 1 Hz sampling rate and 300 to 1100 hPa ranges; and (3) a temperature sensor with 16 bits resolution, -40 to 85 °C range and one second data rate.

Pandlet CORE

Pandlet MEMORY, which is an extra memory block that allows to record two weeks of inertial data at 100 Hz (using a standard 4GB uSD card). It also includes a uUSB plug for wired charging.

Pandlet SENSING+, which is a module that enables the addition of new analog and digital sensors. The digital sensors are interfaced through a standard I2C interface or simple GPIOs, while the analog can be connected to standard or differential inputs of a 16 bits ADC (up to 200 kSamples/s). With new ideas and requirements, new pandlets can be developed and added to this list, allowing the creation of new devices.



fraunhofer.pt

Fraunhofer Portugal AICOS

Rua Alfredo Allen, 455/461
4200-135 Porto, PORTUGAL

Phone: (+351) 220 430 300

E-mail: info@fraunhofer.pt

www.fraunhofer.pt

