



**DE BETHUNE**  
L'ART HORLOGER AU XXI<sup>e</sup> SIÈCLE

## The "Sensoriel Chronometry Project" a world-first exclusive for De Bethune

1. The Sensoriel Chronometry Project includes a Printed Circuit Board (PCB) platform that provides a multi-sensor perspective on the environment in which it is deployed. It is integrated to a laboratory wristwatch with a range configuration identical to a De Bethune wristwatch. The sensors are capable of measuring the following parameters:

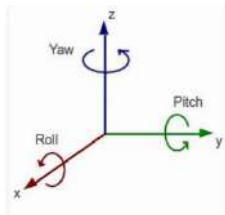
- Pressure
- Humidity
- Temperature

Acceleration (in two directions) according to various possible configurations:

- 2/4/8/16 g
- 100/200/400g

Spatial position

- Gyroscope



Magnetism (in three directions) according to various possible configurations:

- 500 Gauss
- 1000 Gauss
- 2000 Gauss

2. Three operating modes during measurement are available:

- A "**time sampling**" mode, with one or more sensors activated at the same time and sampled at the same frequency, which can vary between 1 and 1,000Hz è essentially intended for recording data on the wearer's lifestyle.
- An "**Events**" mode, one sensor at a time è intended for burn-in lab test procedures for movements.
- A "**Histogram**" mode, one sensor at a time è intended for burn-in lab test procedures, serving to detect extreme values.



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### **3. Measurement autonomy**

- The autonomy of the measurements varies according to the number of sensors in use and the chosen reading frequency. The battery's autonomy can vary between eight and 48 hours before recharging is required, depending on the chosen configuration.

### **4. Data volumes**

- When the watch is worn during an eight-hour working day at a frequency of 800Hz, we record data for each sensor at an interval of  $12.5 \cdot 10^{-3}$  seconds corresponding to 80 data points /second for each sensor in operation.
- This corresponds to a very representative range and a volume of 2,000,000 data points/hour.

### **5. Data processing**

- One application software tool for the user.
- One data processing software tool
- One software package for transferring data to the robot for inspection before delivery of the customer's watch on the basis of data collected by the customer with the sensor-equipped platform.