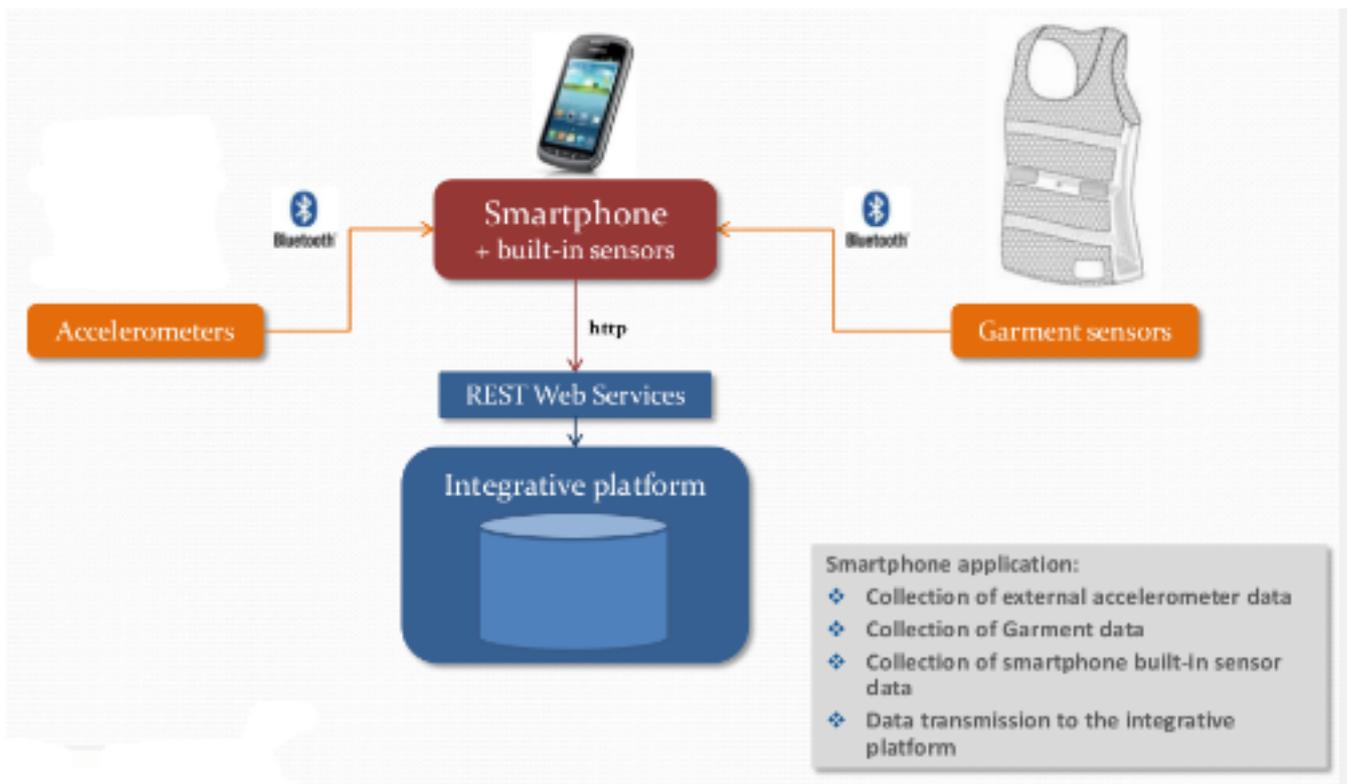


Ambulatory application

One of the TEMIS system's components is a mobile platform whose purpose is to continuously monitor the user in order to quantify and qualify its physical activity. For that purpose, a smartphone is connected with a set of sensor devices. Altogether, these sensors constitute a sensor network associated with a single individual's body, following a networked architecture where the only common point to all its nodes is the smartphone.

In the TEMIS application context, this network of sensors is made of a garment that enables to **measure vital signs** (temperature, heart rate and respiratory rate), **complemented with external accelerometers** (one located on the thigh and an optional one located on the wrist) and **the built in sensors that are integrated in the smartphone** (GPS, accelerometer, gyroscope and magnetometer). The criterion is that provided data is useful to make a better assessment of user's condition and to improve situation reporting.

The external accelerometers will serve as a fixed reference compared to the smartphone's accelerometer whose position and orientation will not be known. The idea behind this architecture is that the subject can use the smartphone as he would use it in his day to day life.



Within this architecture, **the smartphone will acquire the data from this network of sensors**. This data acquisition will be done via a wireless Bluetooth connection for the garment and the external accelerometers. It will temporarily store the sensor data and then send them to the TEMIS system integrative platform when a communication network is available (3G, WIFI). This data transmission will be done thanks to Web Services that are provided by the TEMIS integrative platform using the HTTP protocol.

In addition to data collection, the smartphone will provide 2 user interfaces to the user:

- * **One will enable the subject to declare the type of activity he is currently doing, or to define an event that is occurring like a specific mental status (stress, etc) or the taking of a drug.**

This information will be crossed with the sensor data for the validation of the physical activity assessment and will be used in further analysis.

- * **Another one will enable the subject to view the data that have been collected by the TEMIS solution.**

This feedback application will display a chart that presents the subject physical activity for a selected day (types of physical activities and durations for the day). And it will display graphs that will present the evolution of the subject's vital signs for the selected day (heart rate, skin temperature, respiratory rate).