



## SIX DOF SCALABLE FINGER TRACKING SYSTEM

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### Background

SRPSs (Short Range Wireless Positioning System) are recognized as an enabler technology in several practical scenarios, such as Ambient Assisted Living, Location Based Services, posture detection and biometrics, haptics, control of sport acts and tele-manipulation. As of late 2015, sub-centimeter accuracy can be achieved using commercial SRPSs that rely on wired and this can limit the usability and scalability of SRPSs,

### Objectives

This project aims at the development of a new SRWPS, capable of enabling and facilitating new applications. Main target applications are innovative data gloves, and wearable biometric systems for biomedical activities.

### Methodologies

Developing a data glove for the measurement of flexion and extension movements of the fingers of one hand, with particular attention to low cost, low power consumption and low invasiveness. This device can have different applications: interaction with virtual reality to the diagnosis of the health of the hand, to the control of a robotic system for rehabilitation.



FIGURE 1. POTENTIAL APPLICATION OF THE SRWPS.

### Expected Results and Impact

The proposed system would consent tracking the unrestrained motion of individual fingers and phalanxes, with a higher operational range. Body posture could be more effectively monitored, as well as hand and finger motion. This could enable accurate biometric measurements in daily life, monitoring a patient outside a medical lab, or accurate remote manipulation based on gesture recognition. The technology that will be developed by the proposed activity will be portable, accurate, small sized, scalable, wireless powered, and it won't require line of sight. This technology will be an enabling factor in several present and future fields, including advanced tele-manipulation, haptics and man-to-machine interfacing, augmented reality.