

## **Development of a Wearable Mobility Monitoring System**

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Monitoring the mobility of people with physical disabilities is an important part of rehabilitation medicine, as mobility is required to perform most of the activities of daily life, and therefore to maintain independent living. A Wearable Mobility Monitoring System (WMMS) that can monitor mobility within the home environment and the community for a long period of time could be a valuable tool for the clinical professional. The main design objective is to have a low-power, small, compact and lightweight system, that can be easily worn on a person's waist. Current available technologies, such as small accelerometers and the new generation of Blackberry handheld devices, provide a great opportunity to create such a system. The Blackberry can serve as a hub where data will be collected, processed, logged, and transferred. Additionally, some Blackberry smart phones can also provide GPS data and camera functions.

This paper will present preliminary research on a proof-of-concept system that evaluates the BlackBerry as a WMMS platform. For this pilot study, a simple biomechanics monitoring system was created using the commercial human motion capture system, the Xbus kit from Xsens Technologies. Java software was written for BlackBerry 8800 to log and process real-time orientation data sent by the Xbus via Bluetooth connection, and also to log GPS coordinates, and the time-of-day data. This pilot project provides insight into the data logging expectations for a Bluetooth connection over typical BlackBerry devices and real-time programming issues with WMMS applications.