

# Footfalls & Heartbeats

## Executive Summary

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### *The Textile is the Sensor*

Throughout the sports, medical and automobile industries there is an increasing demand for intelligent fabrics to sense and monitor changes in their environments. Footfalls & Heartbeats (UK) Limited (FHL) has developed a series of proprietary processes for manufacturing smart knitted fabrics to measure, in real-time, compressive and tensile force. It is expected that by 2021, \$134 million in sensors will be used with more than half of those revenues coming from these types of sensors.<sup>1</sup> The company is positioning itself to become a leader in the provision of smart textiles to global markets, both now and in the future.

FHL's current proven technology measures tensile and compressive forces with data being able to be displayed in many forms e.g. relative pressure mapping. Changes to the fabric's environment are monitored by interactions within the structure of the monitored textile. Therefore, unlike its competitors, in which solid state sensing systems are embedded within their fabrics, FHL offers a solution whereby "the textile is the sensor". Wires or miniature electronics in the sensing area are removed, providing greater ease and comfort to the user/wearer.

Applications within each field - sports, medical and automobile - are diverse. FHL's technology can be customised to meet the needs of each commercial partner's end use. The produced smart fabrics are cost effective, being composed of non-proprietary yarns and knitted on commercial knitting machines. Applications may include, but are not restricted to, wound care, compression garment systems, monitoring of athlete performance and remote monitoring of health and physiological symptoms for those in high risk environments, such as first responders and defence personnel. The ability to track limb movement and biomedical outputs, as additional functionalities, are also being explored in collaboration with the University of Nottingham using optical sensors. Capillary blood flow, blood oxygen saturation and relative humidity would additionally be able to be monitored, providing a plethora of new innovative application outputs.

The business model used by FHL is to design and license intelligent textile solutions to partners who are leaders in each market segment and have established distribution and marketing channels. Revenue will be generated from fees for customisation of FHL's technology to its customers' specific requirements, up-front licensing fees in exchange for geographic, market or time exclusivity, and royalties on sales. FHL has created barriers to competition through the robust intellectual property protection of its design and manufacturing processes.

FHL was founded by New Zealand chemist Simon McMaster who brings many years' experience researching intelligent textiles. He is supported by a group of directors, who have extensive experience in early stage venture and business development.

<sup>1</sup> <http://www.technavio.com/report/global-smart-fabrics-and-interactive-textiles-market-2015-2019>