Researchers from Dublin Institute of Technology have developed a novel ultra-wide band (UWB) antenna technology designed to link footwear sensors within body centric networks. The technology will enable personal and human-to-human monitoring of posture and movement patterns in real time.

**Advantages**

- **Real Time Data**: The antenna system can deliver wireless information for real time data analysis systems.
- **Low Cost**: Functionality can be achieved by linking the footwear antennas with commercially available low powered UWB radios.
- **Wide range of industrial applications**: This technology can be used in a wide variety of applications conducive to the placement of wearable antennas on the body, particular in medicine and sport.
- **Comfortable and Non Intrusive**: The ultrawide-band antennas are highly compact and can be miniaturised to ensure they can be easily and seamlessly implanted into footwear, causing no discomfort to the user. Also, using radio-linked sensors overcomes the restricting influences of trailing wires on the natural gait and lower leg activity of users.
- **Customisable**: The UWB antennas can be custom built to suit various levels of data coverage and range requirements.
- **On and Off-body Communication**: The antenna capabilities enable footwear connections with upper-body and off-body data analysis systems.
- **Potential Application for other Apparel**: Given the robust and adaptable nature of this technology, it is highly possible to apply the similar functionality to non-footwear apparel.

**Industrial Applications**

The integration of optimised antenna designs with footwear sensors can facilitate a range of emerging medical, occupational and leisure applications. In particular, the real-time monitoring of sensor data from footwear can have important applications within the fields of medicine and sport.

**Commercial Opportunity**

DIT Hothouse is seeking a suitable commercial partner to take this innovative new technology to market. Consumer demand for smart data exchange and the technology to facilitate this is increasing, particularly body-centric wireless communication devices such as personal healthcare and entertainment. The ability to efficiently and effectively transfer and monitor information from a mobile human user presents a significant opportunity for those seeking to commercially gain from this trend.

DIT Hothouse offers excellent commercial terms to licensees on technologies developed through DIT research.
New Technology from DIT

Footwear Antennas for Body Area Telemetry

Stage of Development
A prototype has been developed and successfully trialled amongst physiotherapists to investigate the influences of wireless devices on patient behaviour.

Technology Description
The technology involves the development of antenna capabilities to enable footwear connections with upper-body and off-body data analysis systems.

The antenna have been designed to link footwear sensors within body centric networks through radio-linked sensors that can facilitate detailed real-time analysis across a range of needs and provide Bluetooth type capabilities.

Project Team and Collaborators
The technology was developed through research undertaken by DIT’s Antenna and High Frequency Research Centre (AIRC). The project team consists of:

- Dr. Max Ammann (Primary Investigator)
- Dr. Frances Horgan
- Louise Keating
- Dr. Jacinta Browne
- Dr. Patrick McEvoy
- Domenico Gaetano

Intellectual Property
This intellectual property is confidential know-how based around antenna design and specification developed in DIT.

Next Steps
If you would like to learn more about this technology or discuss commercial opportunities, please contact:

Dermot Tierney, Senior Licensing Executive, DIT Hothouse
on 01 402 7128 or email dermot.tierney@dit.ie

DIT Hothouse is the award winning Innovation and Technology Transfer Centre based in Dublin Institute of Technology. Hothouse leads the consortium responsible for commercialising research from DIT, IT Tallaght, IT Blanchardstown, IADT and National College of Ireland.

Hothouse draws in entrepreneurial and academic talent, ignites creativity and provides a dynamic environment to fast-track businesses and technologies to commercial success.