

Badgers inspire 3D tracking tech

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Young badger. From Oast House Archive. Credit: Wikimedia Commons

(Phys.org) -- Technology originally developed to track badgers underground could soon be used to locate people in an emergency situation such as a bomb attack or earthquake.

GPS is good at pinpointing locations in open spaces but below the surface it's a different story. The limitations of conventional [tracking technology](#) were exposed in the 2005 London bombings, and numerous earthquakes since, where the [emergency services](#) struggled to locate people in underground areas or buried beneath debris.

Positioning indoors is also a challenge, with no clear winning [technology](#) that is able to address people's day-to-day needs, such as finding their way around an airport.

In 2009 Andrew Markham and Niki Trigoni, from Oxford University's Department of Computer Science, faced similar problems when they joined a project to study badgers in Oxford's Wytham Woods. The animals spend much of their lives underground where conventional technology couldn't keep tabs on them.

The solution developed by Andrew and Niki is a technology based on generating very [low frequency](#) fields. This has the unique advantage of penetrating obstacles, enabling positioning and communication even through thick layers of rock, soil and concrete.

"Most technologies are only checking the magnitude of the signal – the signal strength from each transmitter – to work out distance," Andrew told Mark Piesing of Wired. In contrast the new technology measures 'vectors, which give you the magnitude and direction... Our technology can work out your position in three dimensions from a single transmitter.' This contrasts with other approaches such as GPS or WiFi which are based on triangulation and typically require signals from at least four transmitters.

After the work with badgers the team realised the technology had potential applications in many areas such as location-based advertising, finding victims in emergencies, and tracking people and equipment in modern mines. They started working with Isis Innovation to commercialise their research and are currently raising money for a spinout firm, OneTriax, to be led by CEO Jean-Paul van de Ven, who has significant experience in mobile location based services.

The basic software has already been developed and the team believe that obstacles, such as the fact that low frequency fields vanish very quickly, can be overcome with clever signal-processing algorithms.

The aim is to incorporate the new technology into smart mobile devices:

a demonstrator on an Android platform is being developed and, once the technology is perfected, versions suitable for popular smart phones, such as the iPhone, shouldn't be far behind.

Provided by Oxford University

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