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# OUTSIDE IN

INDOOR POSITIONING MIGHT SOON BECOME STANDARDISED, THANKS TO ANDROID PIE, SAYS **ALISTAIR MACLENAN**

Location is integral to how people live their lives. Everyone except my Dad uses smartphones to find their way to somewhere or someone, to track the progress of deliveries, or to marvel at their friends' – or deride their enemies' – athletic capabilities on their wildly expensive bicycles.

The three applications I described above have one thing in common: you, the parcels and your overly tightly Lycra-clad friends have to be outside. That's because the location information at the heart of the various apps is based on triangulating data

## WiFi RTT DESCRIBES AN INDOOR-POSITIONING TECHNOLOGY BASED ON EXACTLY THE SAME PROCESS THAT GPS USES FOR LOCATION

from the network of GPS satellites that are a constant unseen presence high above us.

But when you're inside, those GPS signals that give you all the goodness of location-aware tech outside are extremely weak and will have bounced off an unknown number of surfaces. When, or more likely if, they ever reach your phone, they will be all but useless in describing your position.

Such is the modern world, 'being inside' describes the preferred location of an increasing number of people and for an increasing percentage of the day. Window manufacturer Velux created its 'Indoor

Generation' website to highlight awareness of the growing number of people who don't go outside. And to sell more windows.

Naysayers will say that finding your way around indoors is a simple matter of looking up from your phones and following the handily positioned signs. But that ignores the sheer scale and complexity of some modern indoor spaces, as well as language barriers or the influence of, say, emotions.

So, if you can accurately and automatically communicate your position in three dimensions when you're inside a cavernous shopping mall, a hundred-

thousand-seater sports arena or a high-rise block of flats then you can benefit from all those commercial, safety and time-saving goodies that the outside folk enjoy.

Given the opportunity this affords indoor-space owners to provide an enhanced service to their visitors, you won't be surprised to know that a multitude of solutions have been developed in an attempt to solve this indoor location problem.

October's edition of *GeoConnexion International* explored such 'indoor human-locating' solutions and it is clear that there is very little in the way of a standard

approach. But this looks like it is about to change. Android Pie – is Google's latest mobile operating system and is the first to support WiFi Round-Trip-Time (RTT).

Packaged as part of the prosaically named IEEE 802.11mc specification, WiFi RTT describes an indoor-positioning technology based on exactly the same process that GPS uses for location: measuring the time it takes for a signal to go to and return from at least three known points. In this case, however, fixed and easily accessible WiFi access points within the building have replaced satellites.

Location specialist Crowd Connected achieved better than two-metre accuracy using WiFi RTT in its offices, which suggests the thorny issue of accurate indoor positioning could well have been solved, all without the need for battery-draining applications. Operating system or firmware upgrades may be sufficient for many existing access points, but where replacement hardware is necessary, it should be relatively inexpensive and could be rolled out as part of a standard upgrade cycle.

Where Google Android leads, surely all other phone operating systems will follow. In a short while, it seems, location will no longer only be on when you're out. It will be just as on when you're in.

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