

Path Intelligence and FootPath - Frequently Asked Questions

Who are Path Intelligence?

We are a start-up technology company based in Portsmouth, UK. Over the past 4 years we have developed a unique and patent pending system called FootPath, which provides an automatic way of surveying the behaviour and preferences of large groups of people, simply by observing the anonymous signals given off by their mobile phones.

We like to think of ourselves as offering a 21st Century approach to market research. Instead of a lone researcher standing in a shopping centre asking you what shops you visited and whether you thought there were enough restaurants and toilets, our FootPath system can give centre owners that information automatically and very quickly.

The anonymous data we can collect using the FootPath technology is used to provide trend reports showing what shops are most visited, when the busiest times in the centre were, whether there are sufficient public facilities to serve the visiting shoppers or whether more security staff are needed to name only a few of the benefits that shopping centre managers and shoppers receive from our system.

Ultimately we see our data as helping shopping centres to become more in-tune with their customers so that they can create better, more pleasant places to visit.

How does the system work?

Whenever a mobile phone is switched on it will periodically transmit to the phone network. Our system works by passively observing the initial part of these transmissions. We do not monitor or listen to conversations or text messages. Nor do we transmit or intercept any information and so do not interfere with the mobile network operators in any way. Our system is a detector (not a receiver or transmitter) which can observe the TMSI number and aggregate ensuing data.

Probably the best technical analogy would be to compare our technology with existing web-based systems that measure viewers of web sites, for example Google Analytics.

These systems work by embedding tags within each page of the web site being measured, so every time a visitor views a page on the site the tag is flagged. This enables the system to collect information on how that visitor viewed the site. This system won't collect any personal information but it will collect the temporary internet address of your computer to uniquely identify you (not as an individual but for instance as "Visitor X4BA2") as well as information on how you use the website such as the order of pages you visited or how long you spent on each page. In a very similar way we observe unique ids from mobile phones (called TMSI) and use that to identify the paths that that phone took.

Isn't this all a bit "big brother"?

Not at all. And it isn't even "little brother"! All we do is log the movement of a phone around an area and aggregate this to provide trend data for businesses. It's much less intrusive or invasive than existing methods already in widespread use – for instance CCTV cameras and number plate monitoring as they do collect personal information such as your image or car number plate.

As a company we take privacy very seriously and go to great lengths to ensure we protect people's privacy and that we are doing everything possible to make sure we follow best practice. When we developed FootPath we contacted a number of organizations including Liberty, the Electronic Freedom Foundation and the Information Commissioner. Acting on their feedback we introduced important changes to our system to make it more secure. We are continually looking to engage with critics and improve our practices.

Please read our Privacy Statement and related sections in this FAQ document to find out more about our approach to safeguarding consumer privacy.

Who benefits from your technology?

Everyone benefits from the trend data we can collect – it's a way to collect instant feedback from shoppers without having to bother them for information. In the old days centres would have used researchers to survey consumers but this information takes time to collate and response rates are very low these days as shoppers have increasingly become reluctant to stop and share their feedback. Hence an automated system such FootPath provides a very effective method.

In the same way that TV networks know how many people watched particular programs and use that information to discern what programs to make and how to calculate the costs advertisers must pay to promote their products during different timeslots – we provide the equivalent for shopping centre owners and their resident retailers.

Here are 8 benefits consumers could see from shopping centres using the Path Intelligence technology

- **Better in-mall events** – our system can monitor how successful they were by monitoring the sheer volumes of people attending and for how long.
- **Improved public transport links** - by monitoring how people traveled to a centre. With the government's current emphasis on helping people to use public transport more effectively, having this kind of information can have a very positive, local environmental impact. Busy shopping centres can otherwise create large volumes of extra road traffic.
- **Eliminate congestion within the shopping centre** - FootPath helps centre management understand whether opening hours need to be extended or whether the centre layout needs to be improved to avoid congestion.
- **Cleaner shopping centres and public facilities** – FootPath data helps centre managers to understand which parts of their centre are very busy which means they know when to deploy extra cleaners to ensure that toilets and public areas are always kept spotless.
- **Better security** – over-crowding also leaves shoppers vulnerable to pickpockets and other security risks. Our system can identify congested areas and ensure security personnel are deployed appropriately.
- **Improved mix of stores and centre layout** – the system helps identify which stores are popular and which are not – making sure that the best possible layout and mix of shops is provided for visiting shoppers. If some shops are unpopular they can be switched for brands that customers actually want.
- **Altogether this makes for a much better shopping experience.**

We believe shopping should be an enjoyable pastime. Who wants to go to shopping centres that are congested, poorly laid out, have dirty toilets, are badly positioned for transport links and which pose a security threat to visitors?

How do shopping centre owners and retailers benefit?

The benefits for shopping centre owners of using our technology are huge and there are many possible uses for the information gathered. We can help shopping centre owners get a better understanding of how people use their centres such as the order of stores they visit and the time they spend in different areas of the centre.

These days visits to shopping malls are falling with increased competition from supermarkets, retail parks and the internet. With visit frequency going down it is critical that the shopper experience at the mall is exceptional and that is where we come in. The information we provide assists malls at all levels, from the very mundane - looking at whether or not there are sufficient toilets in the mall - to the more

strategic questions that they face - such as whether or not they have the right mix of retailers across the mall.

Similarly we could help museums identify their most popular exhibits and help exhibition companies plan their venues more carefully around visitor traffic flows.

We are able to provide centres with quantitative feedback on whether the changes they make in the mall are successful. One of the ways we do this is by looking simply at how long shoppers tend to stay within a mall. Academic research conducted in conjunction with Path Intelligence at MIT in Boston has shown that shoppers tend to spend more if they stay in a centre longer – just 1 minute extra can increase total sales by thousands of pounds over a day.

So one way for retailers to counteract the negative effects of falling numbers of shoppers, is to encourage those shoppers that do turn up to stay longer. But you need some way of measuring that – which we can do by calculating the shopper “dwell time”.

Don't retailers already measure shopper numbers?

Yes they have infra red cameras and counting machines which monitor and count the numbers of visitors to their stores. This measure is known as “footfall” and has been used by retailers for many years. Our system provides another level of data by looking at the aggregate paths that mobile phone carrying visitors take and the length of time they spend – known as “dwell time”.

We have conducted research with MIT that showed the information that we obtain from our technology is critical for struggling British retailers. In the past malls have focused solely on looking at the numbers of shoppers that they are drawing through the doors (footfall) but when combined with dwell time, they can get a much more accurate predictor of their performance.

Can you identify me as a shopper?

No we have no idea who you are as an individual we only look at the path your phone takes – it's like looking at a dot moving around a screen. In isolation this information isn't too interesting until you look at the wider patterns and trends and see lots of dots taking the same route or visiting the same areas of the mall.

To learn more about our work to ensure the privacy of individuals is protected and also to keep people better informed about the way we work, please read our privacy policy.

What is the TMSI number?

A TMSI stands for the Temporary Mobile Subscriber Identifier and is a temporary number - which does not contain or reveal your phone number - that the network operator uses to identify your phone. This is the information we use to calculate anonymous shopper paths.

The linkage between this identifier and your personal information is known only by your mobile network provider and is not publicly available. We do not use or have an interest in this information and it would be a breach of the data protection act for us (or anyone else) to get that information without your permission. We consider the TMSI to be just like the temporary internet address that you get assigned each time you log on to the internet. It contains no more information than an internet address would and it changes over time. In fact this analogy is very helpful in explaining how our system works in more detail - as the following point explains.

Do you store personal information?

No we do not detect any personal information and have absolutely no idea who you as an individual.

How do you protect people's privacy?

We take privacy very seriously and work hard to ensure we are following 'best practice' when it comes to protecting privacy. While we were developing our system we spoke to a number of privacy advocates about our system to incorporate their views. Organisations we spoke with included the UK Information Commissioner, Liberty, and the EFF.

Early feedback from one of these organizations revealed we could be doing more to protect consumer privacy and this is why we now hash (or encode) information. This was something we voluntarily introduced to our system to safeguard consumers as an added level of privacy protection. Path Intelligence are very keen to listen to what people have to say about our system and if necessary modify the way we work and our privacy policies to ensure they are as good as they could possibly be.

More specifically in terms of what we do to protect privacy:

- **We only collect anonymous information** - as we don't work with the network operators the information we collect is anonymous. It does not contain any personal information.
- **We change (or hash) the TMSI to add in an extra level of protection** - As mentioned above, we take the extra precaution to encode or hash the ids we have. As soon as we observe the id's we collect we hash them, so that even if someone managed to break into our database they would not be able to match our datasets up with those held by the network operators
- **We present the results in an aggregated fashion** - Our clients get reports on the aggregated data from the thousands of people that go through our sites everyday. We don't tell them that an individual phone went from Starbucks to Gap, rather we tell them that on average x% of people that visit Starbucks also visit Gap, or that on average people spend x minutes in the centre, or that in an emergency 90% of shoppers exited via the expected emergency exits whilst 10% failed to leave the building or left via unconventional routes (for example).

Are mobile network operators involved?

We do not work with network operators other than to use the anonymous ID assigned to a phone during transmissions with their network (the TMSI code). We do not use or have an interest in using personal information about you held by the network operators and it would be a breach of the data protection act for us (or anyone else) to get that information without your permission.

Will I know that your system is in operation when I enter a mall?

Yes, it is very straightforward for consumers to see if our systems are being used because at each of our installations our equipment is clearly visible and labeled with our logo and website address. Our website further explains how the system works and the privacy safeguards that we have in place.