Accurate Passenger Journey Measurement – Why it pays to measure (and how to get your CFO interested)

Simon Meyer - Managing Director of Aviation Solutions at Human Recognition Systems
Simon.meyer@humanrecognitionsystems.com
Why measure the flow of people?

For consumers, their experiences with airports and other transport hubs are often synonymous with waiting. All too often, retail time is eaten away by the dreaded winding queues that have become part and parcel with travel – to the frustration of consumers and management alike.

While the rest of the customer-centric service world clambers to secure the happiness of their guests through seamless and rewarding experiences, transport hubs seem to be stuck in the dark ages. The benefits associated with a happy customer are clear: efficient flow through check in, security or ticket stands leads to increased dwell time in retail areas and food courts. Research has shown people spend up to 45 per cent more time in these areas when they’re happy and unhurried (Newhouse, 2015).

Whether it’s in an airport, a cruise terminal, train station or even a theme park, the key to a happy customer lies in the following basic requirements: Ease of check in or admission, speedy processing and comfort. The quicker and easier the processing experience can be made, the happier the customer will be. Put simply, what you measure, you manage.

By measuring the flow of people, you can optimise your staff by using set thresholds which trigger alerts if agreed wait times are exceeded. By allocating more staff to these problem areas, bottlenecks and queues can be relieved to reduce wait times. Easily accessible historical performance data then enables improved forward planning decisions and forecasting based on predictability.

Key Points

• How can airports and other transport hubs drive commercial benefit and achieve operational excellence from measuring journeys.

• While there are several different journey measurement options, not all of these are accurate or suitable for all transport hub environments.

• Facial recognition comes out on top as the most effective method of measuring passenger flow, providing airports with the power of accurate information for planning and efficient operations.

BY SIMON MEYER
Managing Director of Aviation Solutions at Human Recognition Systems

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The flow system can then provide customers with real time wait information, managing their expectations and allowing them to select the best route. With more advanced systems, you can even use this mastery of queue measurement to personalise and prioritise experiences for specific customers, such as those with special tickets, and even learn more about them through demographic analysis.

In addition, these solutions have been typically focused on key busy areas such as security or check-in processes but there is value in measuring the whole passenger journey, from arrival to boarding, to better understand flows, bottlenecks and opportunities for improvement.

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**Flow measurement technology: the options**

Measuring and understanding the flow of people through any given space is nothing new, and there are plenty of options available to any major organisation looking to invest in this area:

**Device Tracking** – Device tracking methods rely on identifying Wi-Fi or Bluetooth signals. These methods are inherently flawed as they rely on measurement based on each person carrying one Bluetooth enabled device (which must be activated at the time). According to a study conducted by MIT, Bluetooth capture rates can be as low as 8.2% (Yoshimura et al, 2017) in countries with the highest market penetration of mobile phones at over 88% (Statista, 2018). Device trackers are also negatively affected by delineation due to their limited location tracking ability, this means that they may be unable to distinguish between standard and priority lanes, impacting flow management processes.

**People Counters** – There are numerous different technologies used for counting people, using a range of methods such as synthetic intelligence, body heat detectors or video analytics.

- **Synthetic Intelligence**: This works by emitting an ankle height infrared signal, which evaluates ‘event’ patterns as people pass the transceivers using artificial intelligence. This method is unsuited to high volume, uninterrupted traffic as they struggle to discern people walking side by side, and the systems have a high propensity to be blocked by people standing in entrance ways.

- **Body Heat Detectors**: Detecting the body heat profile of people allows them to be counted even when a large number are passing by at once. However, thermal counters have a lower field of vision and are unsuited to most terminal locations due to the limitations of the technology.

- **Video Analytics**: These systems work by observing Little’s Law, which works by measuring how many people are in a queue and how many people are being processed and leave the queue at the ‘exit’ to estimate an approximate queue time (Chhajed and Lowe, 2008). While this method is accurate for calculating the number of people, the use of Little’s Law to ‘estimate’ queue times is unreliable. As explained by Human Recognition Systems’ CEO, Neil Norman, the problem with these queue time estimations is: “Like a phone battery, a ‘prediction’ of how long you have left is NOT how long you have left, as this is determined by how you use your phone, or, how many people are flowing through the queue exit”. This means that should a person in the queue struggle to find their ticket when they get to the desk, the queue processing rate will slow down, making queue times longer. This method of estimating queue times does not account for these variations in passenger flow at the point of estimation, leading to inaccuracies.
Facial recognition: the most accurate measurement solution

If the key to understanding the flow of people through a defined space is accurate data, the above solutions are simply not fit for purpose for most terminals and transit routes with people flow in the thousands. They certainly will not even try to accurately measure journeys, let alone queues.

Facial recognition technology has been proven to be the most accurate technique, measuring point-to-point flows using a person’s face and providing a specific timestamp for their journey. This is carried out by placing facial recognition cameras at designated way-points such as check-in, security or departures, which anonymously capture people’s faces so it is fully GDPR compliant. The split and cumulative timings between way-points give accurate minimum, maximum and average statistical times - alerts are then created if journey times are outside of set goals, identifying emerging operational issues.

MFlow, developed by Human Recognition Systems, is the leading facial recognition system for flow measurement in the world, with pinpoint accuracy at its core. Use in transit hubs across the globe have revealed the benefits an accurate system such as MFlow can bring to organisations with a focus on achieving the most seamless and stress-free experience for customers and passengers.

London’s Gatwick Airport, which has used MFlow since 2010, provides a clear example of how powerful this system can be. In seven years, Gatwick has experienced a 50% increase in total passenger numbers, serving almost 46 million people in 2017 alone. Management of this dramatic increase in passengers has only been possible through the deployment of innovative IT solutions, such as MFlow, enabling the airport to better manage, automate and control key passenger processes.

After moving to MFlow automated system from manual management, Gatwick experienced an immediate change in queue times, reducing the average queue time to just 4 minutes in 2016. In 2018, Gatwick received the award for ‘Most Innovative Airport in Europe’ at Future Travel Experience Europe in recognition of its recent innovative projects. The impressive results measured by MFlow Journey have allowed Gatwick to compete for such prestigious awards.

More than operational benefits, truly understanding the customer through accurate methods and perfecting their experience is the ultimate goal of flow management technology. With an advanced system such as MFlow, a number of additional ways to achieve this are apparent that would simply be impossible using any other system. Airports spend thousands in understanding their passengers in more detail. With PAX info not shared to understand who passengers are, the use of face recognition demographics provides a net picture for commercial department to target increases in aeronautical revenues. At a minimum, what hub would not want to know the retail dwell time by gender and age? The ability of facial recognition to identify demographic data, such as age, gender and ethnicity, could be a revolutionary way to capture market insights and measure the success of footfall generating campaigns. With facial recognition, you can even measure the happiness of customers through the smile on their face.
The future of flow measurement technology

What could be on the horizon for the future of MFlow Journey? Neil Norman, CEO, has shed some insight into what a new MFlow version could look like.

While our award winning product continues to provide second to none measurement, we have invested in the next generation. By keeping infrastructure to a minimum (with even the possibility becoming WiFi enabled), the set up time and cost of the MFlow cameras will be greatly reduced. This will also enable the MFlow cameras to be placed on almost any structure in almost any environment. By becoming Cloud-enabled, there will also be no local server hardware required, resulting in a reduction in upfront investment and better utilisation of existing infrastructure.

We see that there is a real commercial benefit in accurately measuring passenger journey whether at airports, station terminals or anywhere with large customer volumes. This not only drives operational excellence as an improvement through accurate measurement but the MFlow Journey product uniquely provides significant commercial benefit in better understanding customers and how they maximise the revenue from them.

References


For further information

Please visit: www.humanrecognitionsystems.com/mflow
Or call: +44 (0) 333 456 2001