

Customer Group

9 September 2016

10:00 – 12:00

**Room 5D, 5th Floor,
Windsor House**



Agenda item 4

Insights from WiFi data

TRANSPORT FOR LONDON

CUSTOMER GROUP

Subject: Insights from Wi-Fi data stations pilot

Date: 9 September 2016

Customer and user objectives addressed:

- Improve the reliability of transport services, including travel demand management;
 - Grow and improve transport services to meet population growth, and communicate the improvements;
 - Train and equip our staff to deliver what customers and users want; and
 - Provide personalised, real-time, integrated information.
-

1 Purpose and decision required

- 1.1 This paper outlines how, subject to agreement with the GLA, data collected from the London Underground station Wi-Fi network could benefit TfL and our customers. Following an analytical exercise of a small sample of Wi-Fi connection data that tested whether data could be captured and analysed, we propose to launch a four-week pilot of data collection at 54 LU stations in autumn 2016.
- 1.2 This paper is for APPROVAL and ENDORSEMENT of the approach.

2 Background and current status

- 2.1 We have a partnership with Virgin Media that provides Wi-Fi in 250 London Underground stations offering customers internet access.
- 2.2 Data collected as a by-product of this service provision has the potential to give us a far greater understanding of customer behaviour so we can improve the operation, planning and information provision on London Underground. This can potentially be expanded to other services where we provide Wi-Fi, such as Crossrail.
- 2.3 We have conducted some initial investigations using an anonymised sample of partial data from a March day in 2016 to test whether the Wi-Fi data could provide richer information about customer travel patterns than what we can currently collect from our ticketing system and surveys. The findings from this are very encouraging and are outlined in Appendix I.

- 2.4 Working with LU, Travel Demand Management and Commercial Development, we identified a number of potential use cases where Wi-Fi data would provide considerable business benefits.
1. **Customer** – providing better customer information for journey planning and congestion avoidance;
 2. **Medium and Long Term Planning** – Ensuring optimal and evidence-based decision-making for a range of potential investments ranging from the number of new trains procured, station upgrades, timetabling and event management, superseding current survey based methods (e.g. RODS);
 3. **Operational & Safety** – Enable us to manage disruptions and events, deploy staff to best meet customer needs and ensure a safe environment for all who use our network; and
 4. **Financial** –increasing revenue from our advertising assets, reducing spend through more efficient working practices and reduced surveys.

3 Proposed Station Pilot

- 3.1 We propose to run a four week station pilot of 54 LU stations, where we will analyse anonymised Wi-Fi connection data collected from devices detected by Wi-Fi access points in the stations. We are engaging with City Hall to introduce the pilot and will formalise dates of the pilot following these discussions.
- 3.2 For purposes of planning our communications, we have worked to the earliest possible date where we would be able to commence activity. We will discuss the potential approach with City Hall to agree whether we should proceed and, if so, the timescales. Given the preparatory work involved, the earliest we could commence the pilot would be October. Our planning material in the Integrated Communications Plan (Appendix 3) is provisionally based on this date.
- 3.3 We have tested our concept on a small number of customers through a series of commissioned focus groups. The feedback from these sessions has been positive, but our proposed pilot will be the best opportunity to judge how our pioneering concept is perceived.
- 3.4 Therefore, our pilot will be exploratory exercise designed to (a) test the accuracy/reliability of the data and confirm that we can extract the kind value/benefits from it that has been outlined in the business case; and (b) monitor customer perceptions and responses to Wi-Fi data collection on the Tube. We want test whether we can use the data to better understand:
- a. Route choice between stations;
 - b. Crowding on trains, on platforms and other areas of our stations;

- c. How customers move around our stations.
 - d. How we can use the sample of data collected to represent all customers.
 - e. The impact of mobile network connectivity (3G, 4G, GPRS) availability on Wi-Fi on sample size.
- 3.5 We are committed to being open and transparent with customers on how we use data. A range of communication methods will be used to ensure customers are aware that we are collecting data and the rationale for this. We are working with the various teams in TfL to ensure we communicate the pilot to all our customers.
- 3.6 We have shared our plans with the Information Commissioners Office (ICO) and met on August 11 2016 to discuss these further. The ICO have not raised any significant concerns or additional guidance to the briefing paper we submitted. We have committed to keeping the ICO informed.

4 Pilot Review

- 4.1 We will only collect Wi-Fi connection data for four weeks. We will begin the analysis of the data during the pilot but this analysis will continue beyond the data collection period.
- 4.2 The review will consider whether the data collected can meet our requirements and the feedback we receive from customers, governing and regulatory bodies and specialist interest groups
- 4.3 Based on the outcomes of the pilot we will make a decision on roll-out and update stakeholders.

5 Contact

Contact: Ryan Sweeney

Number: [REDACTED]

Email: [REDACTED]

Contact: Lauren Sager Weinstein

Number: [REDACTED]

Email: [REDACTED]

6 Appendix

Appendix 1: Wi-Fi Summary and Next Steps Presentation.

Appendix 2: Map of Station pilot.

Appendix 3: Draft Integrated Communications Plan



Summary findings and next steps from Wi-Fi exploration

CEA Operational Research and R&U Insight





Overview

- User Cases and data opportunity
- 4 key questions investigated
- Findings
- Next steps & funding

Please note all data used for analysis was hashed and stored in a secured TfL warehouse with restricted access. Limited partial snapshot was used in accordance with Privacy and Data Protection Team Advice



Use cases for Wi-Fi

Financial

- Advertising income based on route choice
- Advertising income based on in-station movements (passage, platform etc.)
- Reduced survey spend (e.g. RODS)
- Investment appraisal

Customer

- Real time crowding info for congestion avoidance
- Refunds for customers held outside stations
- Refunds for customers using a disrupted route and journey patterns
- Customer advice where choices are counter intuitive

Operational

- Disruption management based on customer behaviour patterns
 - Staff Deployment and roles
 - Station Control and Congestion Control Emergency Plan

Medium & Long term planning

- Rich data source for range of investment decisions
 - Station Upgrades and infrastructure investment decisions
 - Asset investment (e.g. number of trains to buy)
 - Timetable optimisation



Four initial themes to support these user cases

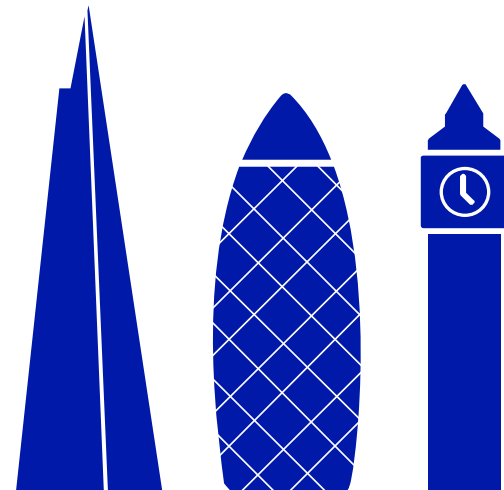
- Route choice (stations, line, interchange)
- In station movements
- Train assignment/left behind
- Total number of devices on the network

Reasons and benefits for looking at Wi-Fi

- Automatic collection
- High spatial and temporal coverage
- Continual collection (seasonal)
- Full network coverage (e.g. Elizabeth Line)



**Total Number of
Customers**

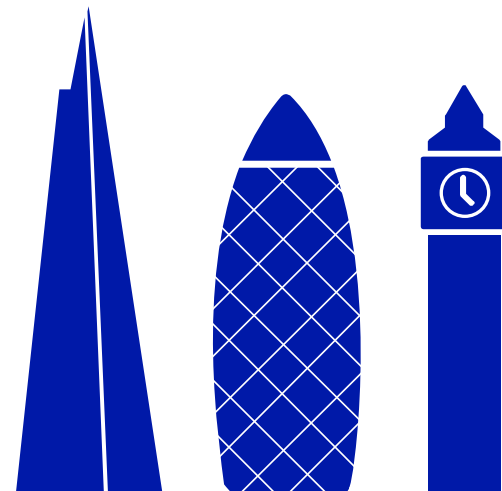


Vauxhall Station

- 1 day analysis
- 1:3 ratio of distinct Wi-Fi devices versus gate line records
- 85% devices seen in ticket hall also seen at bottom of escalators

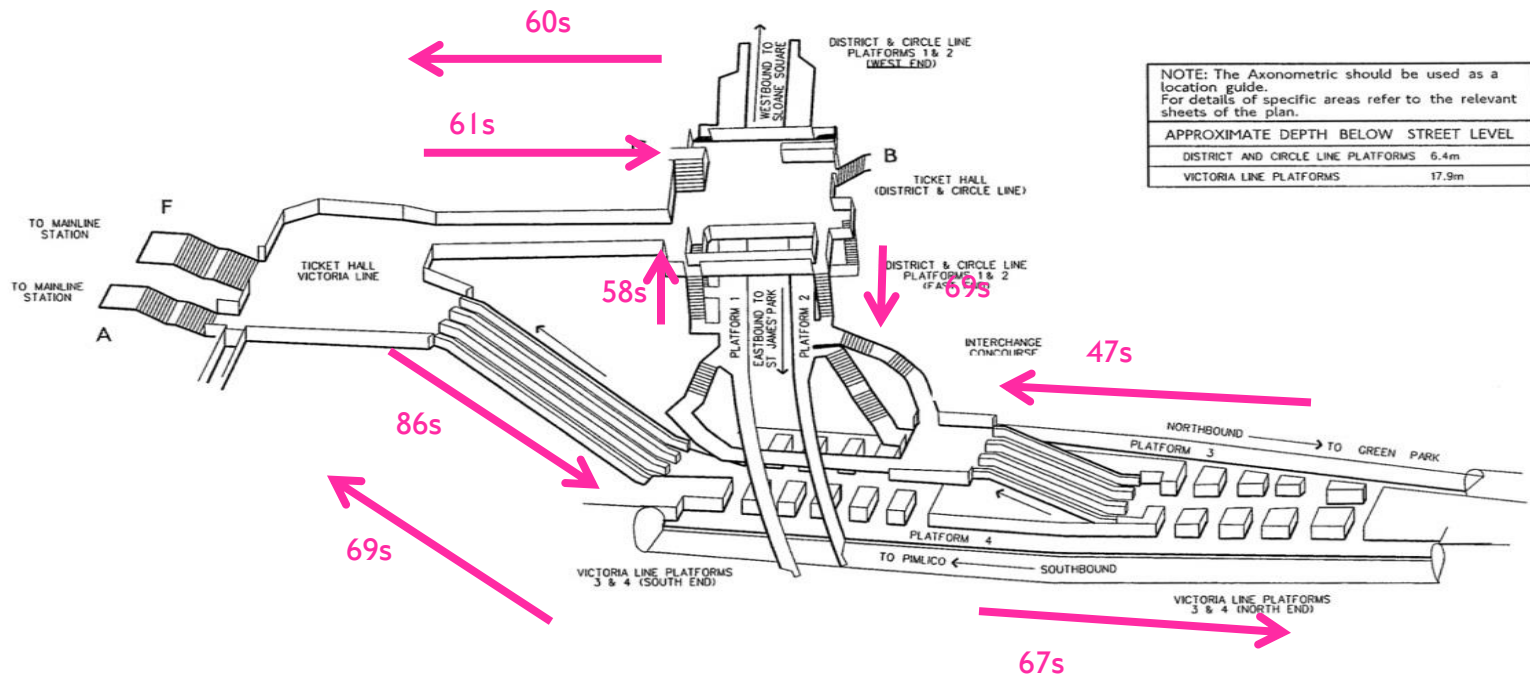


In Station Wi-Fi

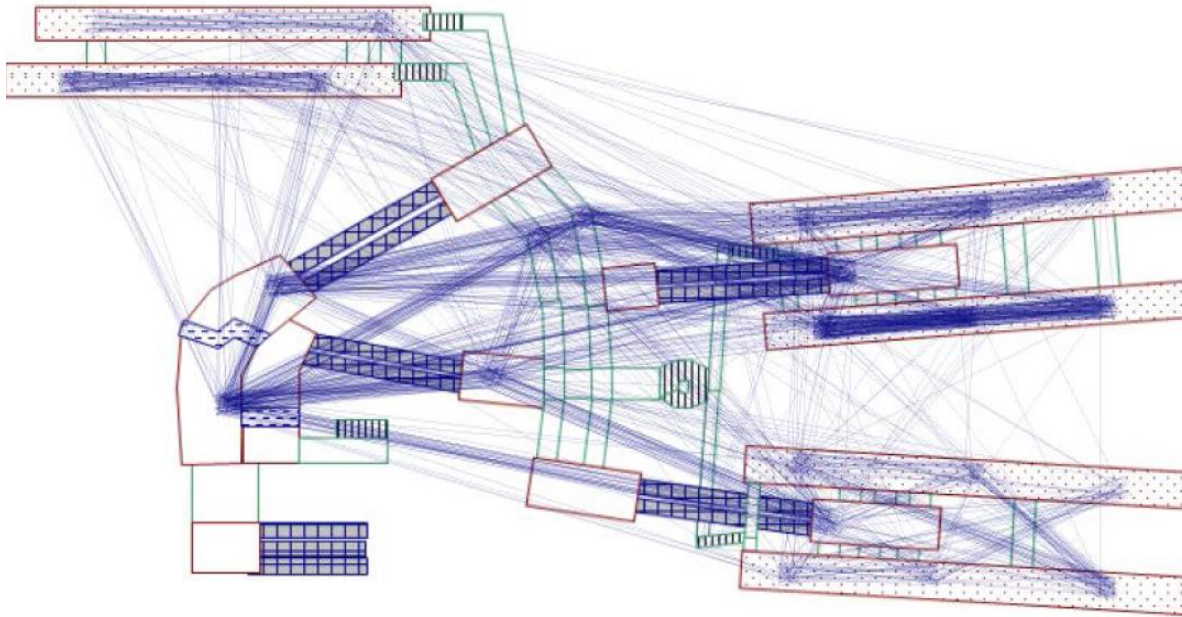


Victoria Average Walk Times

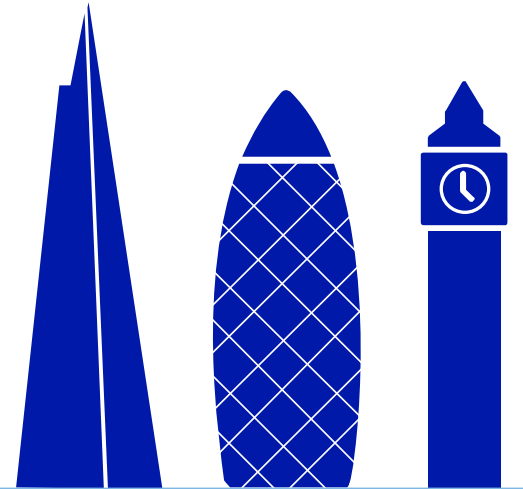
- Average times shown. The range of walk times for different devices is also a valuable data source



Euston Station Circulation

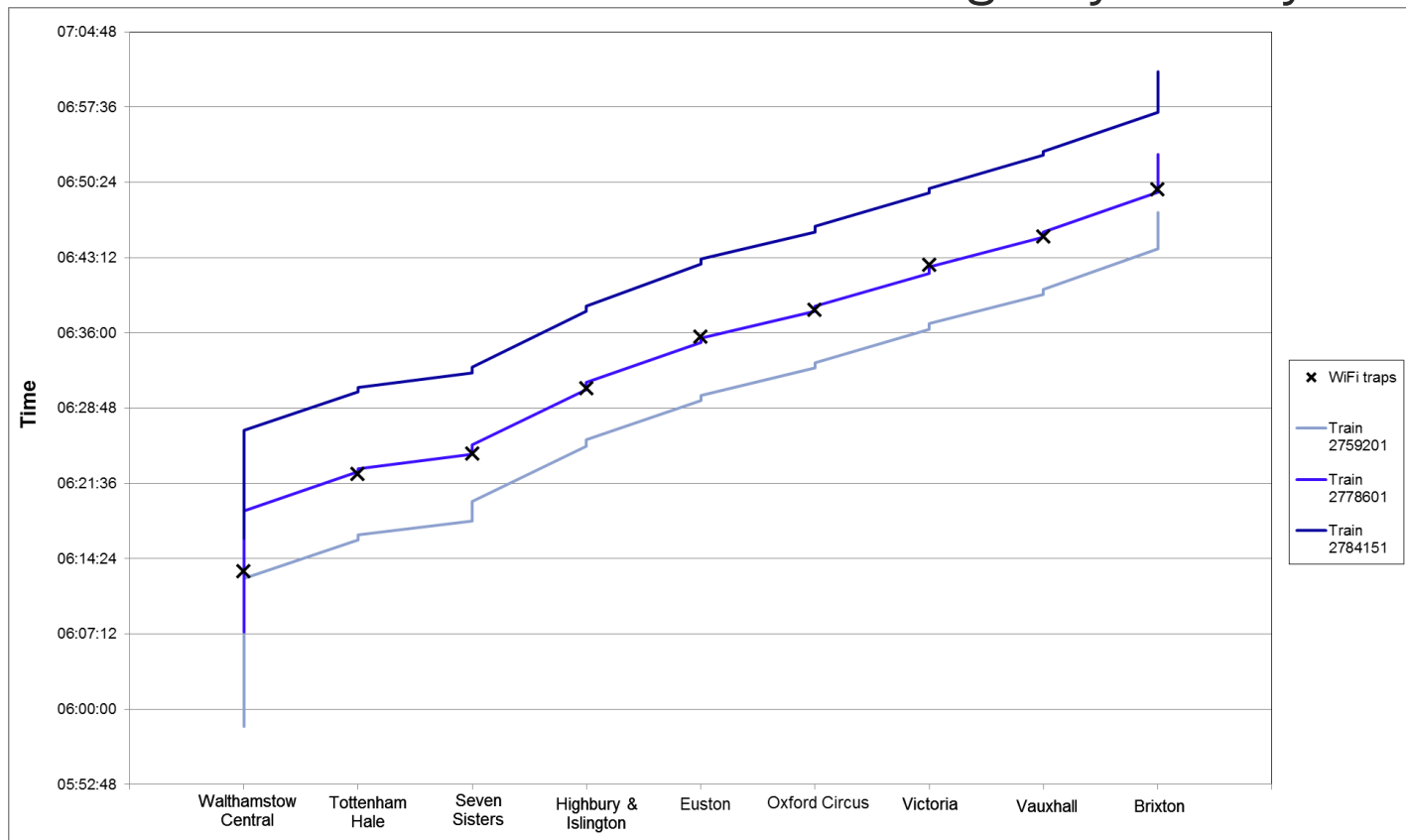


Train Allocation



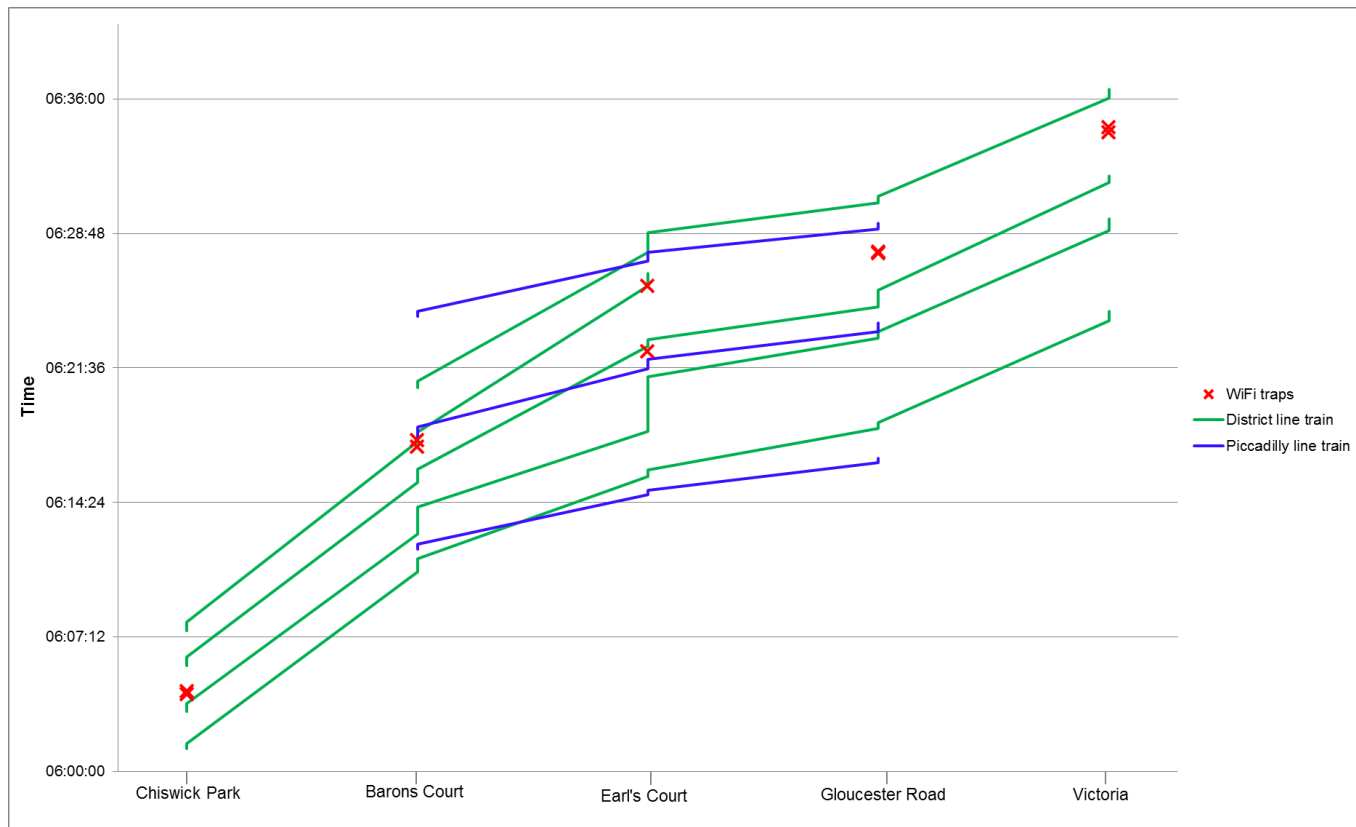
Walthamstow to Brixton (Victoria Line)

- Hashed device assigned to full length of Victoria line based on Wi-Fi and NETMIS times matching very closely

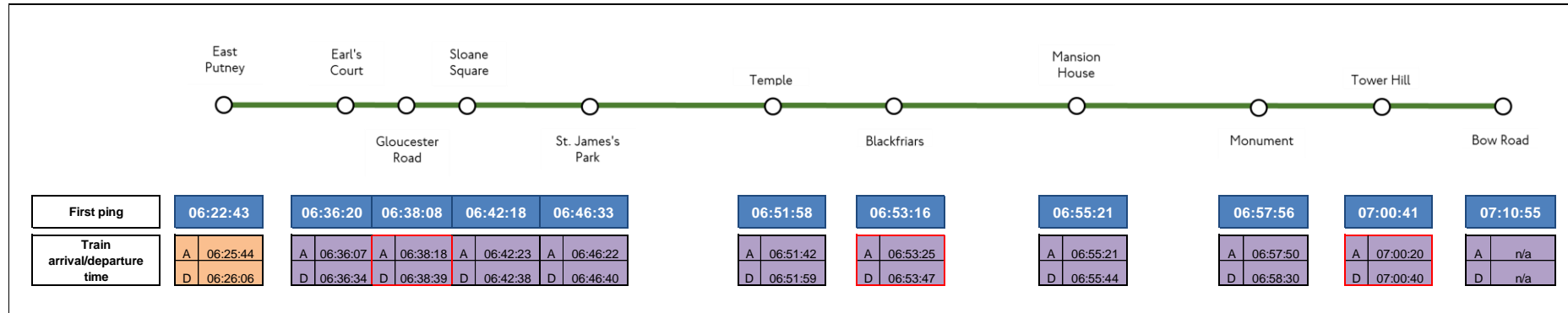


Chiswick Park to Victoria

- However, there was difficulty in repeating it on other sections of the network



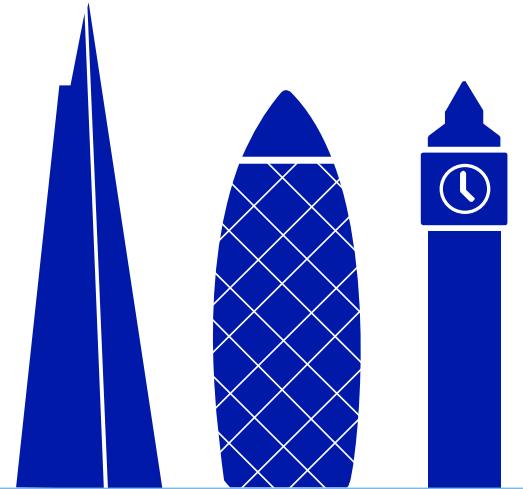
East Putney to Bow Road (District Line)



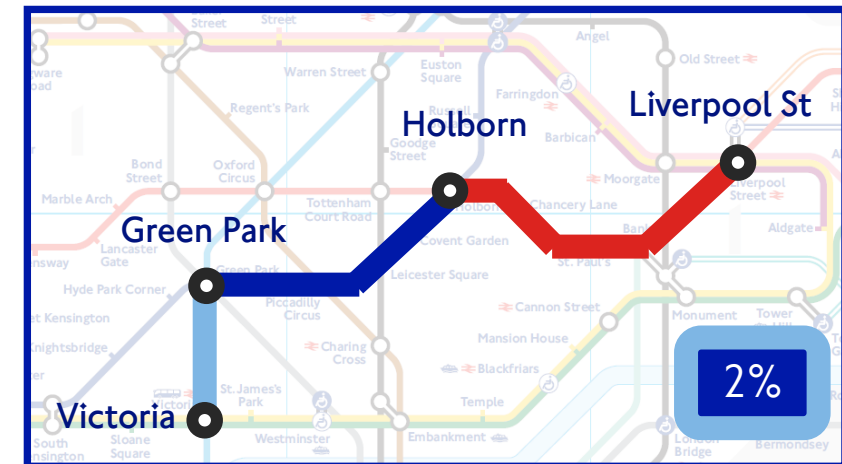
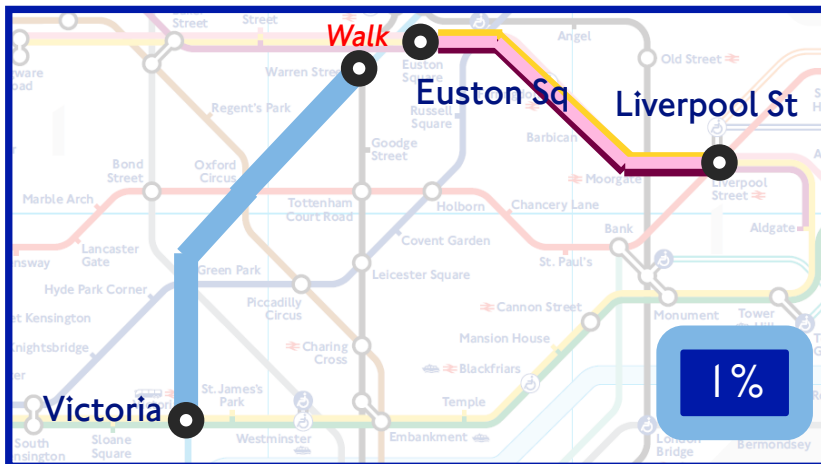
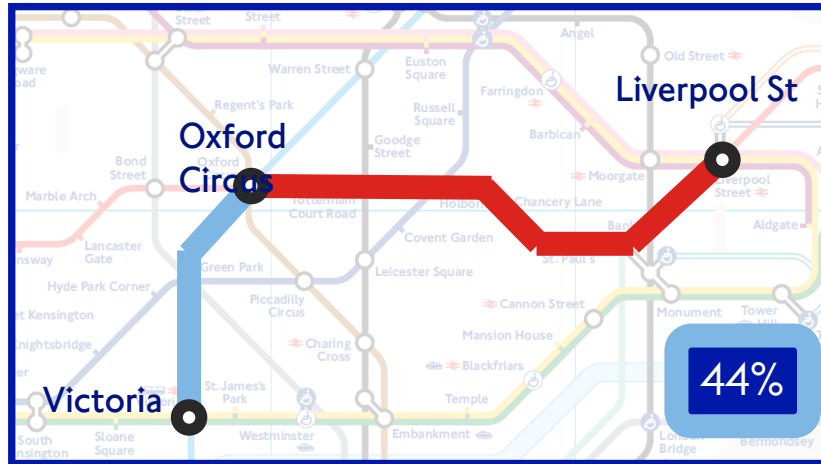
- A hashed device can clearly be assigned to a train from East Putney – Earl's Court and then from Earl's Court – Bow Road based on the traps
- The time of the device first trap and train arrival/departure times from NETMIS match very closely (instances where there is no match are marked in red)
- Limited by available data
 - NETMIS data unavailable fore Bow Road
 - Wi-Fi unavailable fore Victoria and Westminster either as it was not provided or device were unable to pick up the Wi-Fi connection on this particular day



Route Choice



Route identified for 75% of Liverpool Street to Victoria devices



25% no intermediate location

2% other and more complex routes



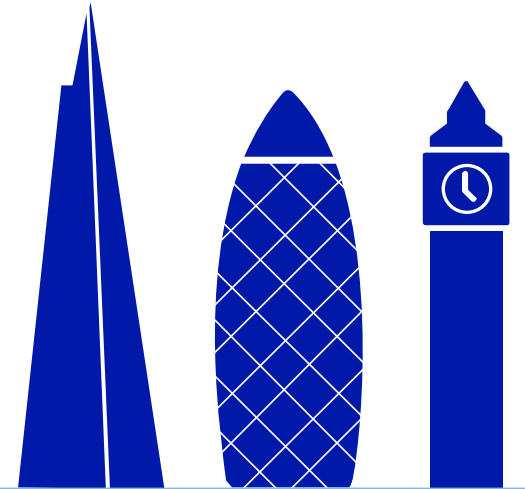
Route Choice: RODS v Wi-Fi Exploration

Route	RODS	Wifi*
Bank/Monument	0.4%	0%
Euston Sq. & Warren Street	1.8%	1%
Holborn & Green Park	0.6%	2%
Kings Cross St Pancras	2.2	0%
Moorgate & Bank/Monument	22.1%	0%
Oxford Circus	73%	44%
Circle Line (no interchange)	0%	26%
Unknown	0%	25%

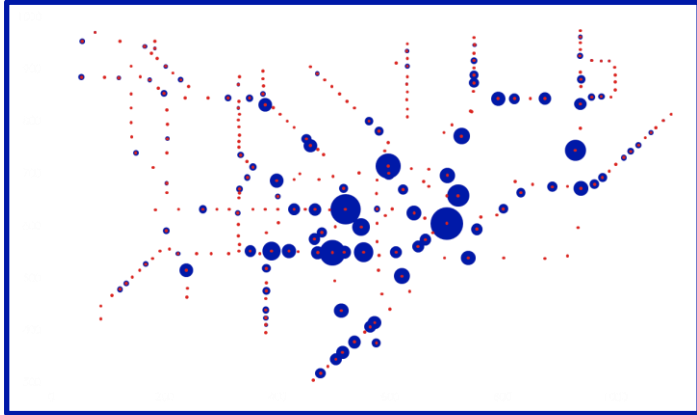
* Wi-Fi 1 hour sample using partial data



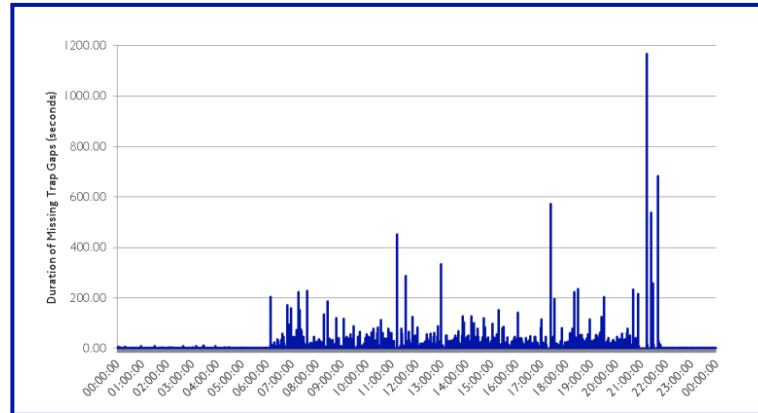
Sample data statistics



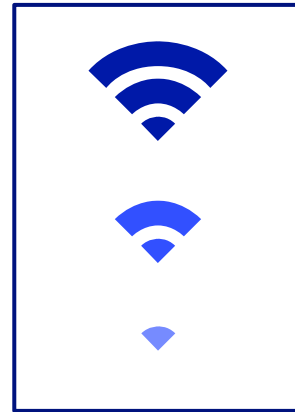
Our analysis was based on limited and partial data



121 stations provided



74% of seconds had no traps between
6am and 8pm



No signal
Strength

- Limited metadata about locations of assets
- Historical data set



Next Steps

- Discussions with teams around TfL have generated 32 use cases
- Gate 0 to be submitted to CE SMT on 14th July proposing:
 - Initial sprint to scope requirements and solution (£40k)
 - Phased project delivery to analyse the data and transformations. Delivering a production data feed with a front end tool making the data accessible (██████)
 - Funding and sponsor to be agreed
- Continuing discussions and privacy impact assessment with Information Governance
- Discussions with different Wi-Fi providers
 - TfL Rail, LO, Network Rail
 - IM/Halo



Indicative Costs for project

Description	Cost
3x Operational Analysts for 3 months to develop the algorithms to transform raw data	██████
1x CEA sprint team (architect, ETL, developers, Product Owner, Analyst) for 3 months (██████) to deliver this as a production service	██████
Customer Information, signage, press release and campaign to advise customers how we are using the data	██████
IM data feed, storage, architecture and in memory database*	██████
Total	£485k

* This assumes next day processing and does not include in-memory infrastructure or any additional in-station Wi-Fi infrastructure



Key dates

- Advertising Partnership Data Strategy assumes Wi-Fi data availability from April 2017 to generate additional income
- Committed to RODS survey this November but opportunity to cease following years
- Requirement to be able to monitor impact of Elizabeth line from May 2017

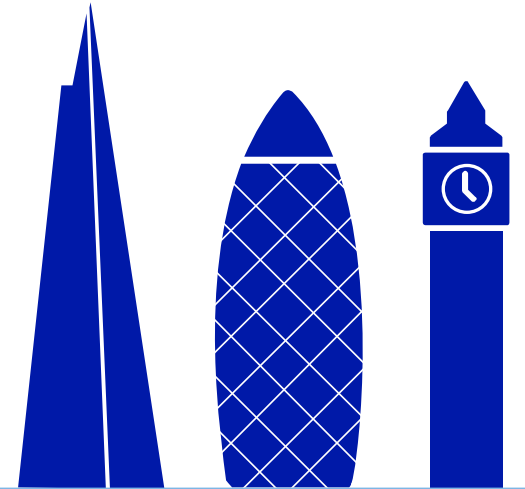




Questions?



Appendix: Use Cases



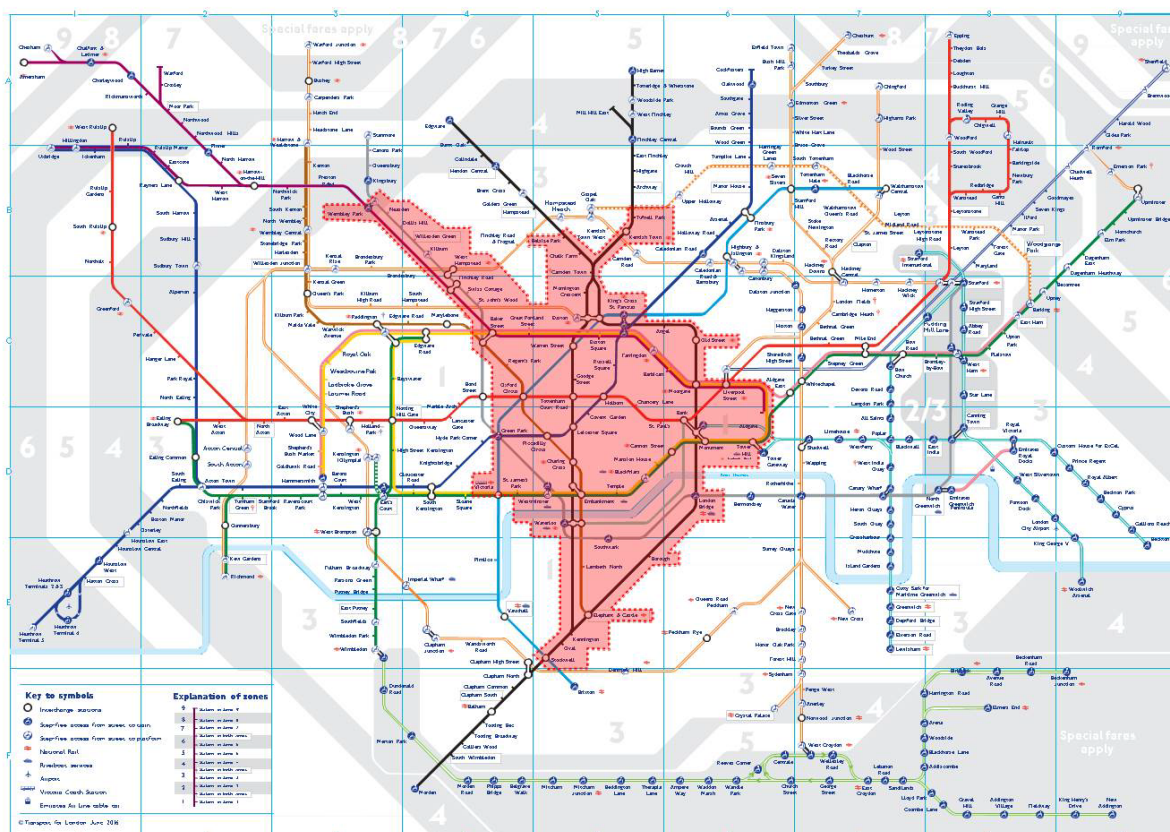
Wifi information required

ID	Use Case Description	Sponsor	Value of decisions	Prime TfL Priority this contributes to	In Station Movements	Route Choice	Train Assignment / Left Behind	Scaling
1	To attract new advertisers and retain current advertisers I need to be able to measure and demonstrate the number of customers who view a specific advertising asset.	Commercial Development	000s Millions	To cost less and to generate more income	Yes	No	Yes	Yes
2	To offer differential pricing of TfL advertising assets at a station level, we require information that measures the volume of passengers at each station and how these volumes vary from day to day, within the day and when there is an event or disruption.	Commercial Development	000s Millions	To cost less and to generate more income	No	Yes	No	Yes
3	To be able to increase the number of times an asset is sold, I need to be able to demonstrate to the client that it has achieved the customer 'eyeballs' agreed. Through this I will be able to increase the number of times TfL sells the advertising space, particularly digital assets.	Commercial Development	000s Millions	To cost less and to generate more income	Yes	Yes	Yes	Yes
4	To offer differential pricing of individual TfL advertising assets based on the number of eyeballs, I require information that measures the volume of passengers who view the particular asset. This user case proposes being able to measure passenger movements in a station, and on a platform.	Commercial Development	000s Millions	To cost less and to generate more income	Yes	Yes	Yes	Yes
5	To increase the revenue from advertising assets I need to be able to demonstrate customer journey pattern volumes (origin and destinations) to enable advertising assets to be sold on a campaign level where the same customer views the same advert.	Commercial Development	000s Millions	To cost less and to generate more income	Yes	Yes	No	Yes
6	To increase the revenue from advertising assets I need to understand and be able to measure the duration in seconds a customer is exposed to a specific advertising asset.	Commercial Development	000s Millions	To cost less and to generate more income	Yes	Yes	No	Yes
7	To be able to change the duration for which a digital media advert is displayed, I need to be able to measure the number of eyeballs in near real time and demonstrate this to the advertising client.	Commercial Development	000s Millions	To cost less and to generate more income	Yes	No	Yes	Yes
8	To understand which advertising assets should be upgraded (to digital) or removed to make more efficient use of resources I need to understand the number of eyeballs these receive.	Commercial Development	000s Millions	To cost less and to generate more income	Yes	Yes	Yes	Yes
9	To be able to offer facilities to advertisers who want to run short campaigns targeting high volumes of people I need to be able to demonstrate which assets achieve the required volumes.	Commercial Development	000s Millions	To cost less and to generate more income	Yes	Yes	Yes	Yes
10	For planning station upgrades and infrastructure investments I need to understand demands at stations and interchange volumes and flows within stations in order to deliver the best design and most cost effective solution.	Transport Planning	Billions	To accelerate the growth and increase the capacity of our network	Yes	Yes	Yes	Yes
11	For asset investment decisions, such as the number of trains we purchase to the amount and implementation of cooling infrastructure I need to understand demand across the network and the shape of this demand within a day. This needs to be at a station, interchange and train assignment level.	Transport Planning	000s millions	To cost less and to generate more income	Yes	Yes	Yes	Yes
12	To develop and implement optimal train timetables with sufficient resilience which minimise wait time for customers I need to understand network demand, platform crowding and in-station movements.	Transport Planning	0s millions	To drive improvement in reliability and safety across our network	Yes	Yes	Yes	Yes
13	To reduce our current reliance of ad-hoc network and in station surveys and the associated cost of these, I need an automated data source that provides me with similar information to use in planning decisions and business case development.	Transport Planning	000s thousands	To cost less and to generate more income	Yes	Yes	Yes	Yes
14	To make informed decisions on both the number of staff I typically need at a station and what roles to allocate these staff to (e.g. gateline assistance, POM assistance, train despatch, crowd control) I require information on the number of passengers, the crowding, passenger origin and destination, passenger station movements and, and customer segmentation (frequent customer vs irregular user).	Transport Planning	0s millions	To invest in our people and lead them to be the best they can be every day	Yes	Yes	Yes	Yes



15	To make informed decisions on both the number of staff I need during an event or disruption at a station and what roles to allocate these staff to (e.g. gateline assistance, POM assistance, train despatch, crowd control) I require information on the number of passengers, the crowding, passenger origin and destination, passenger station movements and, customer segmentation (frequent customer vs irregular user).	Transport Planning	0s millions	To invest in our people and lead them to be the best they can be every day	Yes	Yes	Yes	Yes
16	For station control management, crowd control and the development of the Congestion Control Emergency Plan, I need to quantify demand, walk times within stations and how these vary.	Transport Planning	0s millions	To drive improvement in reliability and safety across our network	Yes	Yes	No	No
17	To implement the most effective station control strategy I need to be able to assess previous implementations and understand current customer movements and journey patterns.	Transport Planning	0s millions	To drive improvement in reliability and safety across our network	Yes	Yes	Yes	No
18	For event planning and disruption management I need to understand passenger crowding and journey patterns to determine whether to hold or dispatch trains, the service we run, the timetable we implement and whether we curtail trains based on customer journey patterns and volumes	Transport Planning	0s millions	To drive improvement in reliability and safety across our network	Yes	Yes	Yes	Yes
19	To assess the benefits of new initiatives (Holborn escalator trials, platform signage and boxes) and their impact on customers I need to understand customer in station movements.	Transport Planning	000s thousands	To accelerate the growth and increase the capacity of our network	Yes	No	Yes	No
20	To refund customers who incur a delay as a result of being held outside a station, I need to be able to measure and identify customers behaviour at a specific location at a specific time to apply this criteria to ticketing data	Customer Experience	Unknown	To put customers and users at the core of all of our decision making	Yes	No	No	No
21	To refund customers who are stuck on a train I need to be able to identify these customers to apply this criteria to ticketing data.	Customer Experience	Unknown	To put customers and users at the core of all of our decision making	No	No	Yes	No
22	To refund customers who incur a delay as part of a station disruption, I need to be able to identify these customers.	Customer Experience	Unknown	To put customers and users at the core of all of our decision making	Yes	Yes	No	No
23	To refunds customers who incur a delay as part of a disruption on a line I need to identify both the customers on the particular services, and those who changed their travel patterns as a result to apply this criteria to ticketing data.	Customer Experience	Unknown	To put customers and users at the core of all of our decision making	Yes	Yes	No	No
24	To be able to provide customers with the most relevant journey information for their typical journey, both based on historic and in near real time, I need to understand individual customer travel behaviour including route choice, station interchange, platform location at a granular temporal level.	Marketing Services	unknown	To put customers and users at the core of all of our decision making	Yes	Yes	Yes	No
25	To be able to provide customers with the most relevant journey information for their typical journey, both based on historic and in near real time, I need to understand individual customer travel behaviour including route choice, station interchange, platform location at a granular temporal level.	Marketing Services	unknown	To put customers and users at the core of all of our decision making	Yes	Yes	Yes	No
26	To inform customers in near real time current and expected journey times (including waiting) and crowding levels to enable them to avoid congestion and make an informed decision.	Travel Demand Management	unknown	To put customers and users at the core of all of our decision making	Yes	Yes	Yes	Yes
27	To be able to inform customers of where crowding may result in a increased journey time and advise of an alternative less crowded route.	Travel Demand Management	unknown	To put customers and users at the core of all of our decision making	Yes	Yes	Yes	Yes
28	To inform customers when a route is more crowded than typical so they can choose an alternative.	Travel Demand Management	unknown	To put customers and users at the core of all of our decision making	Yes	Yes	Yes	Yes
29	To enable customers to choose between similar routes and entry/exit stations based on crowding and ability to board a train.	Travel Demand Management	unknown	To put customers and users at the core of all of our decision making	Yes	Yes	Yes	Yes
30	To advise customers of the most suitable interchange station and route in order to avoid crowding.	Travel Demand Management	unknown	To put customers and users at the core of all of our decision making	Yes	Yes	Yes	Yes
31	To advise customers whether it is better to wait for a subsequent less crowded train to reduce train door incidents and delays.	Travel Demand Management	unknown	To put customers and users at the core of all of our decision making	Yes	Yes	Yes	Yes
32	To advise customers if a station is temporarily closed or operating station control measures.	Travel Demand Management	unknown	To put customers and users at the core of all of our decision making	Yes	Yes	Yes	Yes

Appendix 2: Proposed Area where data will be collected, hashed and anonymised and analysed.



*Tottenham Court Road has no Wi-Fi provision. Based on information <http://content.tfl.gov.uk/wifi-underground-overground-map-october-2015.pdf>

Aldgate
Angel
Baker Street
Bank
Belsize Park
Blackfriars
Borough
Camden Town
Cannon Street
Chalk Farm
Chancery Lane
Charing Cross
Covent Garden
Dollis Hill
Elephant & Castle
Embankment
Euston
Finchley Road

Green Park
Holborn
Kennington
Kentish Town
Kilburn
Kings Cross St. Pancras
Lambeth North
Leicester Square
Liverpool Street
London Bridge
Mansion House
Monument
Moorgate
Mornington Crescent
Neasden
Old Street
Oval
Oxford Circus

Piccadilly Circus
Regent's Park
Russell Square
St. James's Park
St. Paul's
St. John's Wood
Stockwell
Swiss Cottage
Temple
Tower Hill
Tufnell Park
Victoria
Warren Street
Waterloo
Wembley Park
West Hampstead
Westminster
Willesden Green

Integrated communications plan

Customers, communications and technology

WiFi Network data collection pilot. **Draft assuming start data on Monday 7 October which is still to be confirmed.**

October 2016

Sponsor: Graeme Craig
Delegated Sponsor: Lauren Sager - Weinstein

(NB: TO BE DISTRIBUTED AS BELOW NO LATER THAN 7 CALENDAR DAYS PRIOR TO ACTIVITY STARTING)

Marketing distribution	CC&T distribution	Integrated team distribution (please complete)	Employee engagement distribution	Other stakeholders (please complete)
Chris Macleod Miranda Leedham Julie Dixon Phil Young Alison Naylor Alison Henderson	Stuart Lee (for onward distribution to Leadership Team, CC&T Leadership Team) Sarah Gasson Lauren Sager – Weinstein Lucy Fish	Ryan Sweeney Amie Browes Thomas Canning Sarah Cohen Ali Mahmood Charlotte Cox Shimisa Santhirasenan	Mary Strydom Nadine Pangilinan Alison Giroux David Carr	Graeme Craig Guy Allen Lee McGirr Joe Scheinkonig Geoff Hobbs

05.08.2016



Please see appendices for more detail

EVERY JOURNEY MATTERS

Integrated communications plan

Customers, communications and technology

A0.2

CONTEXT/BACKGROUND

- Activate an innovative 4 week pilot starting 10 October 2016 whereby WiFi connectivity data will be collected at 54 selected London Underground stations to better understand journey patterns and improve our services
-
- The pilot will be testing whether WiFi connectivity data can offer benefits in four key areas:
 - **Financial** –increasing revenue from our advertising assets, reducing spend through more efficient working practices and reduced surveys;
 - **Customer** – providing better customer information for journey planning, congestion avoidance and identifying customers eligible for a refund;
 - **Medium and Long Term Planning** – Ensuring optimal and evidence based decision making for a range of potential investments ranging from the number of new trains procured, station upgrades, timetabling and event management, superseding current survey based methods (e.g. RODS);
 - **Operational & Safety** – Ensuring we manage disruptions and events, deploy staff to best meet customer needs and ensure a safe environment for all who use our network
 - Collected data is not used to identify individuals and all Media Access Control (MAC) addresses will be encrypted and stored in a secure database within a secure data warehouse. Access to the encrypted data will be controlled to a limited number of analysts and usage monitored
 - This pilot will comply legally with privacy and data protection guidelines and Customer Experience Analytics are working closely with Information Governance and the Information Commissioners Office
 - Once the pilot is complete, TfL will share its findings with regulatory and governing bodies and decide whether:
 - To commence full network data collection to enable continuous analysis of WiFi
 - To undertake an additional or extended pilot to allow more analysis or feedback



Integrated communications plan

Customers, communications and technology

- o To cease collecting and processing WiFi data altogether

KEY OBJECTIVES

Business objectives

- Inform customers who use our network that a 4 week pilot will run between 10 October and 7 November inclusive, where WiFi connection data will be collected

Main customer & user objective

- Improve the reliability of transport services, including travel demand management
- Use data to improve both the operation of the London Underground network and provide better customer information
- Train and equip our staff to deliver what customers and users want; and
- Provide personalised, real-time, integrated information

Note that the pilot will not itself achieve these objectives but will determine whether we can implement and deliver this as a project if the pilot is successful

KEY MESSAGES

- TfL collects WiFi connectivity data to better understand journey patterns and improve our services
- Collected data is not used to identify individuals
- For more information visit tfl.gov.uk/privacy (the website will give further details on the pilot and include FAQs to help customers better understand how we carefully managed collected data)
- The pilot is for four weeks and only at a limited number (54) of LU Stations
(Key messages are legally compliant and have been approved by privacy and data protection experts in Information Governance)



Integrated communications plan

Customers, communications and technology

TARGET AUDIENCE(S)

- All users of the underground, registered customers, All TfL Staff, Media, Special Interest Groups including the ICO
- Key staff engagement – CCO, Social Media, Station Staff

RISKS

- Reputational damage to TfL as some customers may be uncomfortable with data being collected and all data will automatically be collected from any device within range of a WiFi access point. To opt out customers will either have to switch off WiFi connectivity on their device or set the device to airplane mode and not subsequently enable WiFi connectivity
- To combat this risk as recent research indicated TfL needs to ensure that customers feel*:
 - We are being transparent
 - Assure customers that individuals will not be identified
 - Highlight the benefits to the customer (for instance improvements to their travel experiences if TfL understands journey patterns better)
 - They understand the purpose and can understand more at our dedicated WiFi privacy webpage

OUTCOMES

- Customers informed that this pilot is taking place, reminding them TfL communicates honestly and transparently
- The pilot forms part of TfL's continuing work to ensure that all revenue is reinvested in delivering a modern and affordable transport network. Depending on the outcome of the pilot, the data could also be used to help improve wayfinding within stations in the future to ensure



Integrated communications plan

Customers, communications and technology

customers understand the quickest and most accessible routes, as well as help TfL make best use of current and future commercial assets within its stations and help generate revenue to be reinvested in London's transport network

* Findings were from the Mobile data and privacy report (2016)

BUDGET

- Total budget for the pilot is £40k, of which £2k is allocated to integrated communication support



Integrated communications plan

Customers, communications and technology

Integrated communications activity plan

Channel	Start date	Audience detail	Description of activity	Key messages
Press	w/c 26 September	Media	<ul style="list-style-type: none"> Press release announcing the pilot Broadcast media interviews with Lauren Sager Weinstein and Stuart Reid or Gareth Powell at Warren Street A Metro article would look to run w/c 26 September in advance of the pilot beginning reiterating the key messages from the press release A robust Q&A to explain where the pilot will take place, what is involved, any concerns around the pilot and how we plan to use this data 	<ul style="list-style-type: none"> Explain why we are collecting WiFi data, what we plan to do with it and key customer benefits Collected data will not be used to identify individuals Communicate the tangible benefits to customers so they better understand why we are collecting data
Social media	w/c 26 September	Twitter/ Facebook/ Tech blog	<ul style="list-style-type: none"> Social Media posted by Press Office to highlight trial, explain benefits and address any concerns around the trial Blog posts during trial to inform digital community what we are doing and provide a feedback forum 	<ul style="list-style-type: none"> Explain why we are collecting WiFi data, what we plan to do with it and key customer benefits



Integrated communications plan

Customers, communications and technology

Channel	Start date	Audience detail	Description of activity	Key messages
TfL.gov.uk	w/c 26 September	Customers	<ul style="list-style-type: none"> New dedicated wifi privacy website page 	<ul style="list-style-type: none"> - Summary of the trial and stations involved - About the data being collection - How to opt out - 20+ FAQs - How and where we store the data - Explaining how the data will remain secure and private
Marcomms	w/c 10 October	Customers	<ul style="list-style-type: none"> Informing customers at participating stations through posters in ticket halls and platforms that WiFi connectivity data is being collected Using a combination of customer information boards and DR circuit posters depending on where the message is most appropriate 	<ul style="list-style-type: none"> TfL collects WiFi connectivity data to better understand journey patterns and improve our services Collected data is not used to identify individuals For more information visit tfl.gov.uk/privacy
Staff engagement	w/c 26 September	All Staff	<ul style="list-style-type: none"> Source article, LU intranet article, Yammer Station briefings via line general managers to cascade to staff at stations 	<ul style="list-style-type: none"> What we are doing, why and website link to FAQs Help staff with who to contact if further assistance is required



Integrated communications plan

Customers, communications and technology

Channel	Start date	Audience detail	Description of activity	Key messages
Contact centre briefings	w/c 26 September	All CCO staff	<ul style="list-style-type: none"> Briefings, FAQ information Support on the day of media release from project team 	<ul style="list-style-type: none"> Help the contact centre understand the trial in more detail and who to contact in the project team if further assistance is required
Stakeholder engagement	w/c 26 September	AMs, MPs, transport watchdogs, travel watch tech and business community, safety and accessibility groups	<ul style="list-style-type: none"> Targeted emails to stakeholders and advance notice to selected trusted contacts to obtain supportive comments and statements 	<ul style="list-style-type: none"> TfL collects WiFi connectivity data to better understand journey patterns and improve our services Collected data is not used to identify individuals For more information visit tfl.go.uk/privacy

(Overview of above proposed activity will be shared for review and endorsement with Customer Group and Technology & Data Group)

CREATIVE WORK

Will be included once finalised

ADDITIONAL INFORMATION



Please see appendices for more detail

EVERY JOURNEY MATTERS

Integrated communications plan

Customers, communications and technology

- Project Leads – Ryan Sweeney and Amie Browes (reporting to Shashi Verma and Lauren Sager – Weinstein)
- Press and Media – Thomas Canning
- Marketing operations – Ali Mahmood
- Information Governance – Lee McGirr

APPENDIX I

- 1.1 Customer Experience Analytics Operational Research (CEA OR) analysed a day's sample of WiFi data to understand its value to TfL. This demonstrated that:
 1. Individual route choice and interchange (line and stations) can be identified;
 2. In station movements routes can be measured in terms of volumes and durations;
 3. Train assignment or left behind can be calculated and crowding inferred;
 4. All the above can be scaled to network totals based on representation of devices.
- 1.2 A Gate 0 paper was submitted to Customer Experience SMT and approved on the 14 July to formalise this as a project. This project will deliver:
 1. A productionised real time feed of all WiFi device location data into the CEA Data Warehouse Platform for use by many across TfL;
 2. Methods that identify route choice and interchange between origin-destination pairs, in station movements volumes, duration and platform crowding, at a minute by minute level for every day for the whole TfL rail network covered by WiFi. This will be 1 day in arrears. (s)
 3. A user friendly front end interface to make the derived intelligence accessible and query-able to all business users



Integrated communications plan

Customers, communications and technology

- 1.3 The project would be delivered in phases based on technical components. The information outputs would be designed to ensure compatibility with ODX (our public transport matrix that includes bus inference) and Customer Segmentation analysis to provide us with a rich and complete data source.
- 2 CEA have worked with Information Governance to develop a pilot. For this we have selected 54 stations to enable TfL to collect the variety of data required to test the use cases whilst minimising the amount of data collected during the pilot. The justification for selecting this as the data collection areas are
 1. **Understanding route choice.** We want to understand the various routes (lines and stations) taken by customers between their entry station and exit station (which we may already know from ticketing data). This data will enable us to better plan the network and could deliver a superior, larger, more frequent and cheaper data set than Rolling Origin Destination Survey (RODS) data.
 2. **Understanding crowding and train assignment.** We want to understand if we can use a combination of WiFi and train scheduling and telemetry data to measure train crowding and to help us understand how customers interact with crowded trains. This will assist communications with customers about the specific levels of crowding they may experience on their journeys and allow them to make informed choices about the type of journeys they make
 3. **Understanding in station movements.** TfL has a variety of stations on its network from small stations served by one line to major termini with multiple lines and many possible walking routes within stations to reach platforms. To understand in station movements we have selected some of the largest and most complex stations where a variety of movements are possible and small stations where station movements should be straightforward.



Integrated communications plan

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4. **Scaling seen devices to network totals.** WiFi data will only be a sample. Some customers will not carry a WiFi capable device, others will have WiFi turned off, and some may not be within range of the WiFi access points. We are also likely to double or treble survey some customers who carry multiple WiFi enabled devices. By selecting the proposed area we will be able to understand how we scale the devices seen to network totals and remove any bias within the data.
5. **Understanding the impact of mobile network connectivity on WiFi.** Only 45 per cent of the London Underground network is in tunnels and therefore has limited data connectivity. For the remaining 55% it may be possible to connect to a radio network (GPRS, EDGE, 3G or 4G) through a mobile network provider for data connectivity. We wish to understand how the availability of radio networks impact the number of customers connecting to station WiFi.

