O_2 Motion data helps quantify demand for responsive transportation services in Bristol

O_2 Motion provided two anonymised and aggregated data sets – a trip-based origin-destination matrix and a trip-chain-based data set. These were used to build an agent-based model to identify the best places for a new Demand Responsive Transport (DRT) service to improve urban mobility.

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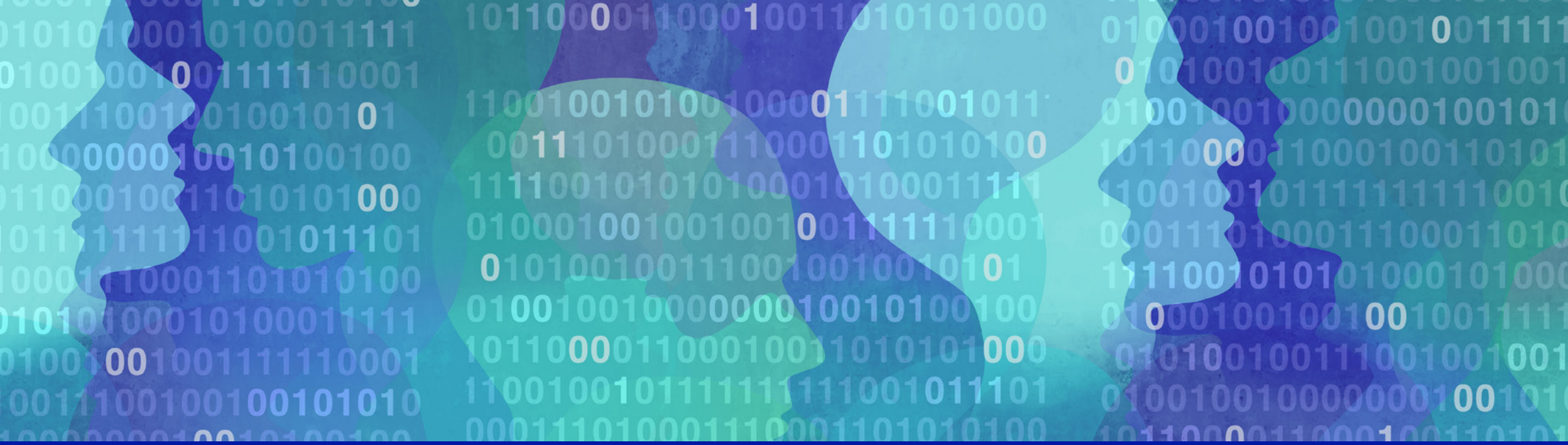
O2 business



A blueprint for learning

O_2 Motion data formed the basis of various initiatives to develop optimum public transport links for a new 'mobility service'.

Challenges

- Up to 14,000 new jobs are expected in Bristol by 2030
- New development areas have little or no data on residents who've moved to the area since the 2011 census
- It has proved difficult to establish areas of 'transport poverty'
- There is a requirement to improve accessibility to low income and disadvantaged areas in Bristol

Products

- O_2 Motion mobile network data (MND)

Results

- Anonymised and aggregated data sets identifying demand and travel behaviours that users undertake in their daily activities
- Results showed that simulations built using O_2 Motion trip-based data led to better insights about users' travel patterns – identifying the best places for the introduction of new 'mobility services' and their integration with the existing public transport networks
- Mobile network data (MND) reveals real travel patterns and is not affected by unconscious bias that might influence data captured during manually collected surveys
- The MND was used to create activity-based models to simulate and visualise transport demand within the study area
- An eight-month trial of a shared mobility service, the design of which was informed by O_2 Motion data, was operated by transport consultancy Esoterix, in partnership with First Bus

The Connected Places Catapult operates at the intersection between public and private sectors, local government and transport authorities, accelerating smarter living and travelling in and between the places of tomorrow. As part of their work for the Mobility on Demand Laboratory Environment (MODLE) in Bristol, they engaged O_2 Motion's mobile network data to provide insight into travel patterns to see where new demand-responsive mobility services could be best placed.

O_2's origin and destination data set is fully anonymised, but it shows how groups of people are on the move and at what time, as well as their starting areas/ zones and destinations. With 25m users across the UK, O_2 has one of the largest and most complete data sets of movement around the country. And because people tend to take their mobiles with them everywhere, location data can be aggregated to establish reliable patterns of travel.

The data was used to build agent-based transport models and develop strategy to identify areas that need new transport services, particularly in areas of transport poverty, such as north Bristol. It also helped to identify areas with high levels of traffic congestion and inform thinking about how transport might look in the future, including mobility as a service solution (MaaS).

Using O_2's data, transport consultancy Esoterix, in collaboration with Bristol bus operator First West of England, set up the 'MYFIRSTMILE' discounted shared taxi service as an eight-month trial, as part of an Innovate UK supported project called "Mobility on Demand Laboratory Environment" (MODLE). The service was designed to take travellers to their nearest bus stop. The agent-based model established which routes would be likely to be most attractive for users.

"Our data was instrumental in building an insightful agent-based simulation to identify demand, and assess the impact of new mobility services within the public transport network – in this instance providing data on potential demand for services which link to the core bus network in areas underserved by bus in north Bristol."

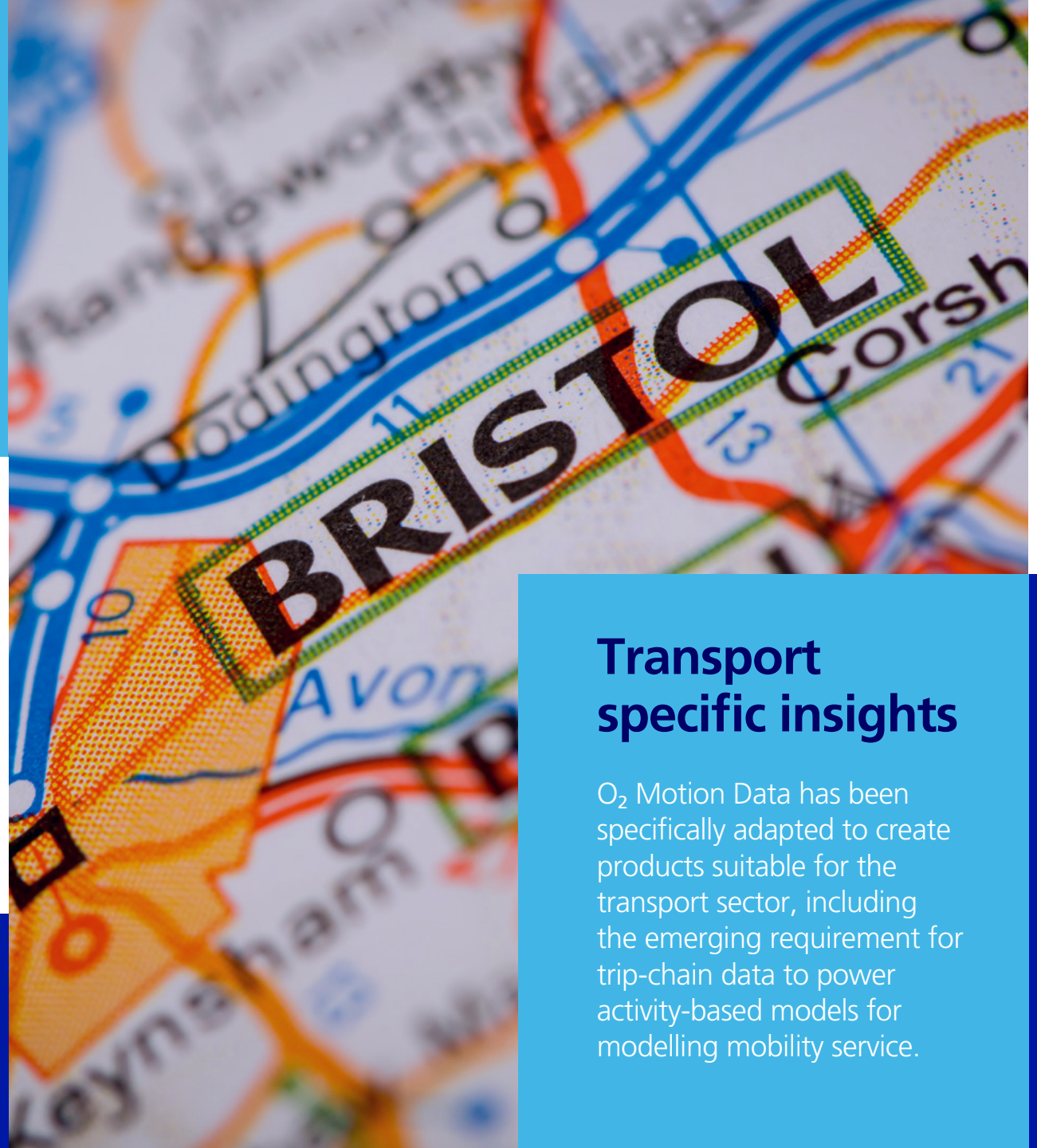
Andrew Gillham, Business Development Director, O_2 Motion

25m users

O_2's huge reach, approaching 30% of the UK mobile market, allows for an unparalleled data set reflecting public travel, and is much more reliable than surveys.

Shared taxi trial

Data helped to establish areas of transport poverty and identify best places for the 'MYFIRSTMILE' on-demand shared taxi service.



Transport specific insights

O_2 Motion Data has been specifically adapted to create products suitable for the transport sector, including the emerging requirement for trip-chain data to power activity-based models for modelling mobility service.

Activity-based travel patterns

Data forms the basis of transport models designed to visualise and simulate the need for mobility solutions and their potential impact on the network and people's habits.

"Activity chains powered by mobile network data is a new source of data which can be exploited further and will contribute in identifying the most sustainable combination of new mobility services during the place making process."

Dr Patrizia Franco, Connected Places Catapult

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