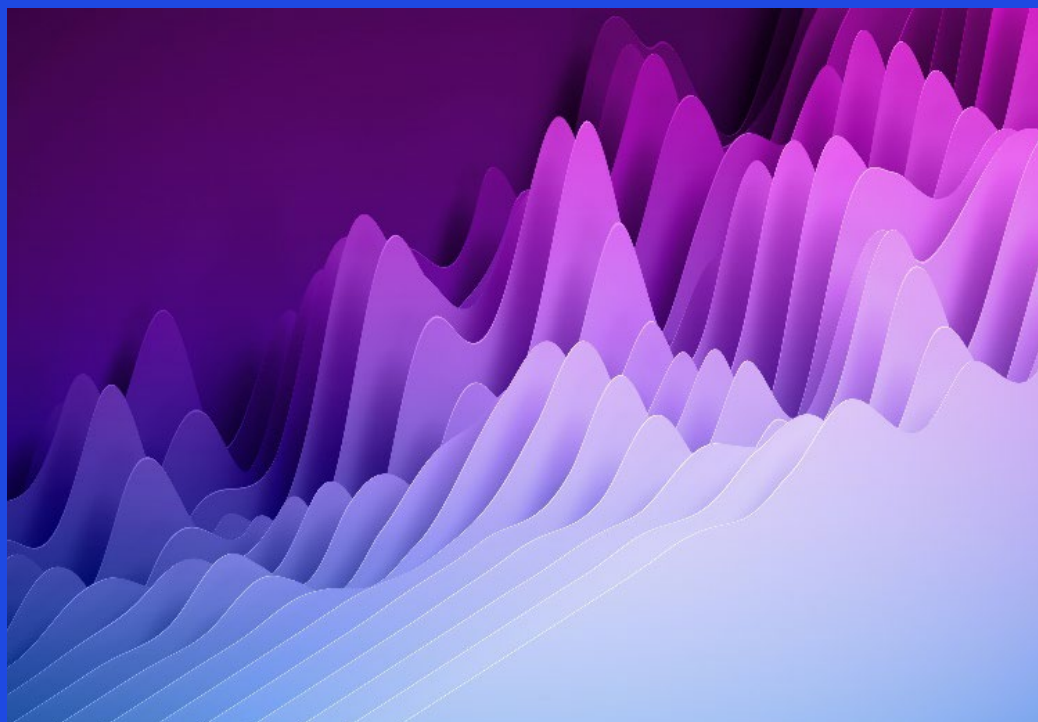# KPMG

Transforming public transport with the Bus Open Data Service

Case study with Department for Transport

Transforming public transport with the Bus Open Data Service

Realising the hidden potential of bus services

The bus network sits at a critical junction: bus fares continue rising above inflation and its usage has been in decline (with patronage getting even lower during the pandemic).

And yet buses have significant social, economic and environmental benefits. They are the most used form of public transport, and providing 123,000 jobs and £6 billion gross domestic product. They also have a critical role in reducing congestion and provide accessible transport for many.

All compelling reasons for the UK's Department of Transport (DfT) wanting to make it easier anyone anywhere in England to travel by bus.

Recent projects across metropolitan local government bodies which co-ordinate transport services show how open data can boost public transport networks, resulting in an increase in journeys and delivering economic benefits.
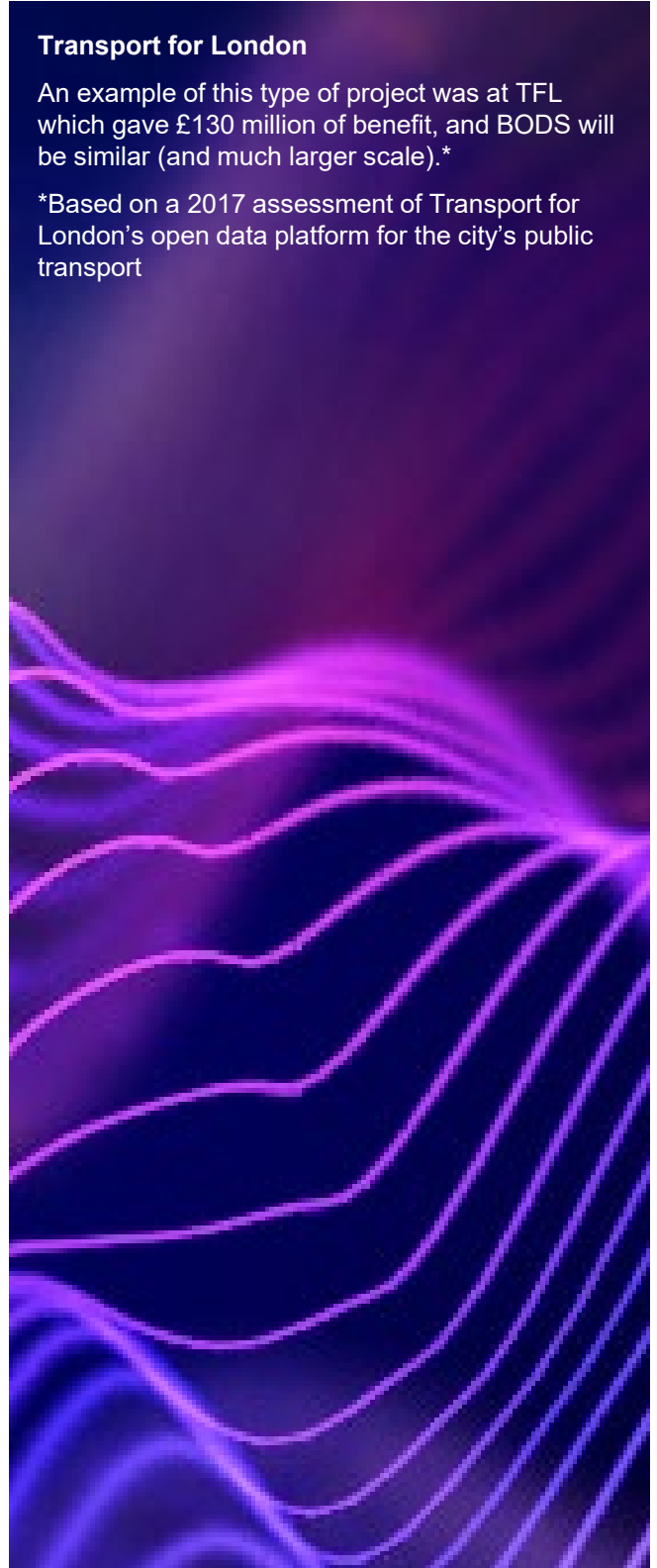
DfT wanted a solution that would extend this concept to the whole English national bus network, tapping into the unrealised potential of bus services up and down the country. This required collating data from more than 400 bus operators in England and presenting it in a unified form to improve passengers' travel information and increase bus patronage.

The destination was clear. The question was: how to get there?

Transport for London

An example of this type of project was at TFL which gave £130 million of benefit, and BODS will be similar (and much larger scale).*

*Based on a 2017 assessment of Transport for London's open data platform for the city's public transport

[1] https://www.gov.uk/government/publications/bus-open-data-implementation-guide/bus-open-data-implementation-guide

Transforming public transport with the Bus Open Data Service (cont.)

▶ Transformation through open data

KPMG produced a world first: a national unified open data platform for all bus transport timetables, location and fares data across England. This platform, the Bus Open Data Service (BODS), enables information from bus companies to be collected in a way that can be easily accessed by data consumers (e.g., passenger app developers, mapping providers , researchers, etc.) so that with just a few clicks they can find out timetable, fare and current location information for any bus anywhere in the country.

The open data service indexes and makes available transport data using industry open standards (e.g., TranxChange, NeTEx, SIRI). These can then be accessed by data consumers via a variety of methods: rest APIs, front-end dashboards and bulk downloads. Experience with existing metropolitan services shows this will lead to innovations within the digital transport sector while providing valuable insight for researchers and policymakers seeking to increase public transport use and reduce carbon emissions.

BODS was designed to ensure the data capture and processing, and all business activities, comply with strict Government Digital Service (GDS) standards. It enables bus operators to meet their legislative requirements on information publication of the 2017 Bus Services Act, upholding standards that support the bus industry.

We used our proprietary 'Agile in government' delivery methodology to design and manage the overall programme. This involved creating multi-disciplinary teams that brought together KPMG experts in data analytics, cloud, human-centred design, testing, government, and our technical sub-contractor Ito World, to develop the bespoke solution. Tasks included designing, automation testing, deploying, providing cloud services and implementing the transformation while ensuring the data was complete, accurate and timely.

The programme required extensive user research with stakeholders, ranging from data publishers such as bus operators and local authorities, to consumers, including passengers and journey planning providers.

User testing was performed in an end-user environment and we employed both qualitative and quantitative usability testing methods, interviews and consultations, with results informing changes to the digital service.

Our processes included feature prioritisation and technical developments, daily stand-ups, retrospectives and agile co-location, while a cycle of ongoing user testing ensured feedback and supported our ability to continuously shape the solution across multiple work streams.

Accessibility was a must. We incorporated members from the Digital Accessibility Centre, a user-centred initiative engaging people with disabilities, into our teams to conduct research and participate in user studies. This ensures that the solution addressed assisted services and user support requirements.

The platform

Once the platform goes live data will be captured from an estimated:

3,000
-plus service users[2]

33,900
buses

4.5 billion
journeys each year[3]

[2] KPMG estimate
[3] From DfT slide

Transforming public transport with the Bus Open Data Service (cont.)

▶ Climb aboard

On-demand services and real-time journey planners give consumers the information they need to make optimal travel choices. The better the information accessible to passengers, the higher is the growth in bus usage, resulting in lower usage of private cars and emissions from them.

More accurate information encourages demand for bus services while saving local authorities money and providing exciting new business opportunities for technology companies and valuable insight for transport planners.

BODS will form the bedrock for England's transport data national infrastructure for years to come. As well as being one of the most well-used open data platforms, it can be integrated with other data sources in the future, providing additional value and insight into transport choices.

When the earlier and smaller project carried out by Transport for London was assessed in 2017, economic savings and benefits were estimated to be £130 million. We believe that BODS will result in even greater economic benefits given its far wider geographical remit and increases in productivity that can flow from improved and instantly accessible bus information.

▶ The journey continues

Before BODS there was no unified transport data platform for the whole bus industry in England, and very few platforms with transactional open data feeds. BODS is trailblazing platform that is setting the standards for other transport open data platforms to follow (both in the UK and around the world).

Just as importantly, this platform will help transform the bus industry into more of an on-demand model. In order to reduce the number of private cars on the roads, public transport needs to respond to demand and be more flexible. The ability of BODS to enable this makes the platform hugely interesting to governments across the world.

And its value extends beyond transport. This methodology can be extrapolated for any governmental organisation looking to build a serverless open data platform. KPMG can deliver on similar digital transformation programmes and our expertise from BODS will add greater value and depth to similar projects.

Every central government department in the UK follows gold standard of Government Digital Service (GDS). KPMG's experience on BODS has solidified our expertise in building GDS-compliant technology solutions and products. Our proficiency in driving a national infrastructure digital transformation project using GDS principles firmly solidifies our brand as technologists trusted by government to deliver its specific requirements to its exacting standards.

[2] KPMG estimate
[3] From DfT slide

Open data can change lifestyles: the 15-minute neighbourhood concept

▶ Living locally

The 15-minute neighbourhood is a concept derived from the Franco-Colombian professor Carlos Moreno. It is a new paradigm for urban development; to be able to access everything you need to carry out in your daily life within 15 minutes, by means of walking, cycling, taking public transport or a shared micro-mobility service.

"I would like to offer a concept of cities, that goes in the opposite direction to modern urbanism; an attempt at converging life into a human-sized space rather than fracturing it into inhuman bigness, and then forcing us to adapt. I call it "the 15-minute city" Carlos Moreno

15 minutes

▶ The future of open data

The proposal that cities should be designed, or redesigned so that within the distance of a 15-minute, people should be able to access work, housing, food, health, education, culture and leisure.

The COVID-19 pandemic saw an unintentional shift to living locally, which has reinvigorated interest in community and has ignited the 15-minute neighbourhood concept. Globally, more urban leaders are waking up to how this concept is both workable and desirable. Paris, Milan, Portland and Melbourne have recently launched proposals and initiatives to adapt or adopt to the locality concept. This movement of hyper-locality, can also be seen in Saudi Arabia's futuristic new city of Neom, which is firmly grounded in creating circular pockets of neighbourhoods where everything is accessible.

The DfT's Transport Decarbonisation Plan, outlines that by encouraging a transport mode shift to walking and cycling is one of the most cost-effective ways of reducing transport emissions and decreasing congestion. 43% of all urban and town journeys are under 2 miles, by replacing these with cycling or walking would produce significant reduction in carbon output, air quality, noise and congestion.

Active travel also has proven benefits of well-being and health. Research by Sustrans shows that keeping physically active can reduce the risk of heart and circulatory disease by as much as 35% and risk of early death by as much as 30%.

With an opportunity to lean into a more sustainable way of living, for both residents and businesses and offering local services and amenities to be provided on your doorstep, makes cities more liveable, vibrant, with an enhanced sense of community and sense of place. Economic benefits are seen, as research shows that well-planned walking improvements can lead to a 40% increase in shopping footfall.

The key in understanding the provision of locality is data. The success of the Bus Open Data Services, has shown that BODS has an opportunity to host multi-modal open data, therefore enabling the end user consumer with more accurate, more varied and more insightful information.

KPMG