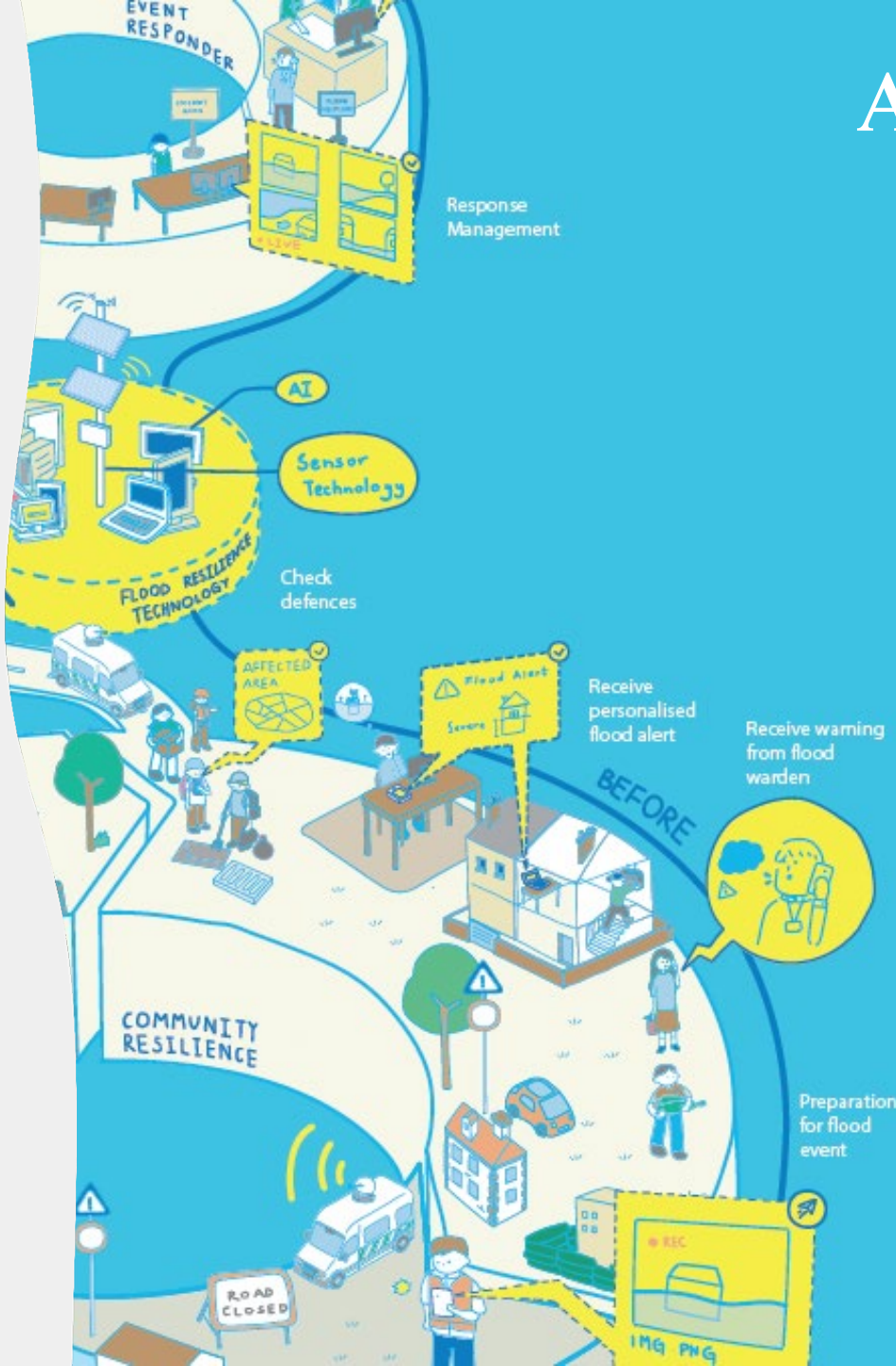
ARUP

# G-Cloud 14
# Digital transport

**G-Cloud 14**
**Service definition document**

# Our firm

Arup is a global collective of designers, consultants and experts dedicated to sustainable development, and to using imagination, technology and rigour to shape a better world



# Our aims

The aims and principles laid out by Sir Ove Arup in his Key Speech, continue to underpin our firm today

- Social usefulness
- Total architecture
- Humane organisation
- Straight and honourable dealings
- Quality of work
- Reasonable prosperity

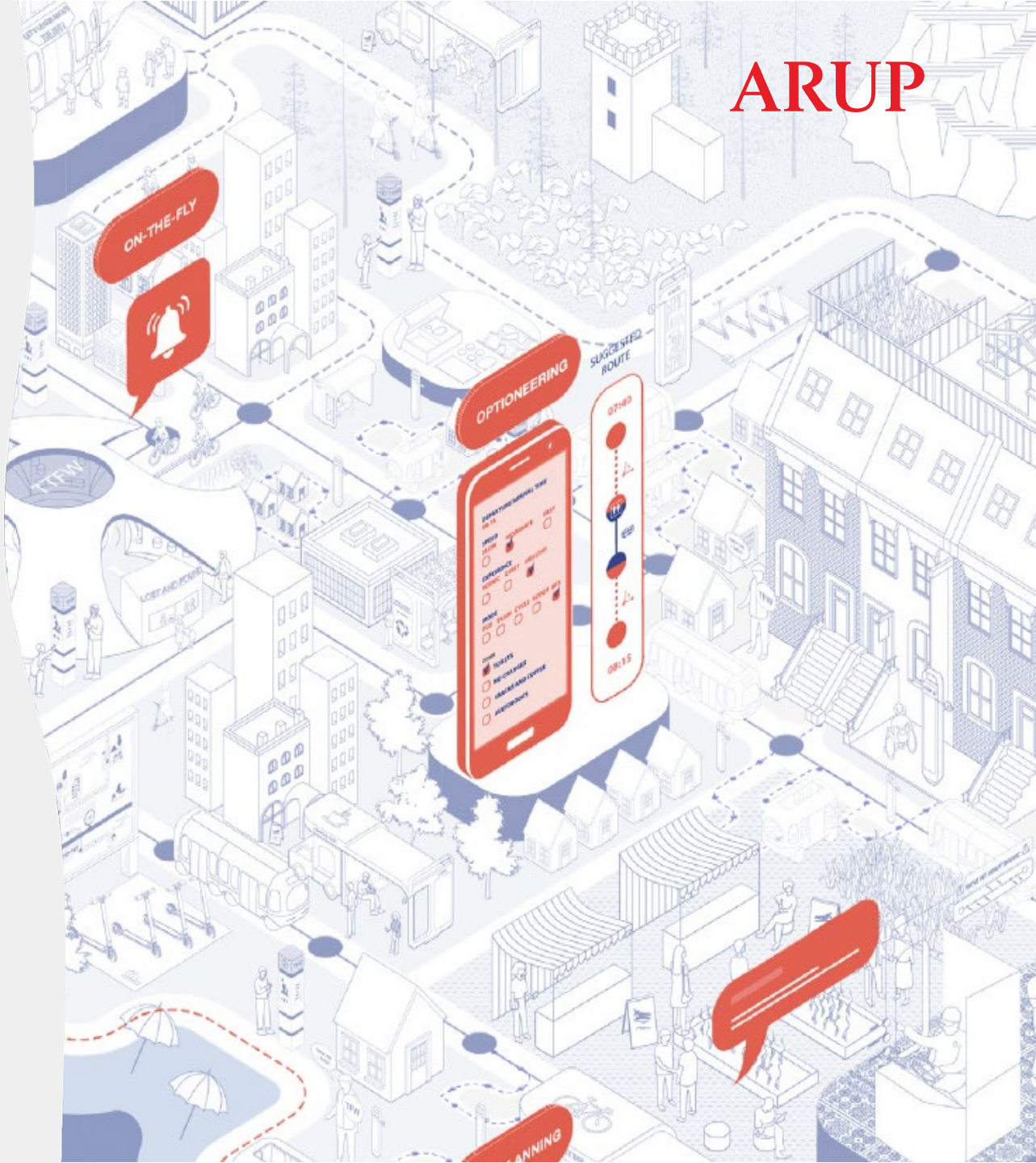
# Who we are

We combine digital expertise with market knowledge to advise on the role of digital and data in the built and natural environment

We deliver services and solutions that solve complex challenges for our clients

# Our strategy

We work with clients, partner and practitioners who share our commitment to create a sustainable future for everyone



# Our partnerships

From climate change to city resilience, our long-term collaborations help us to tackle some of the world's toughest problems

# Some of our clients















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# Our G-Cloud 14 services

- Digital service design and development
- Discovery phase
- Alpha phase
- Beta phase
- Digital Asset Information Management
- Digital Strategy and Architecture
- Built Environment Data Advisory
- Digital Transformation
- Digital Energy
- Digital Water
- Digital Transport
- Experience Design
- Digital for Sustainability
- Digital Twins
- Digital Planning
- Co-Design
- GIS (Geographic Information System)

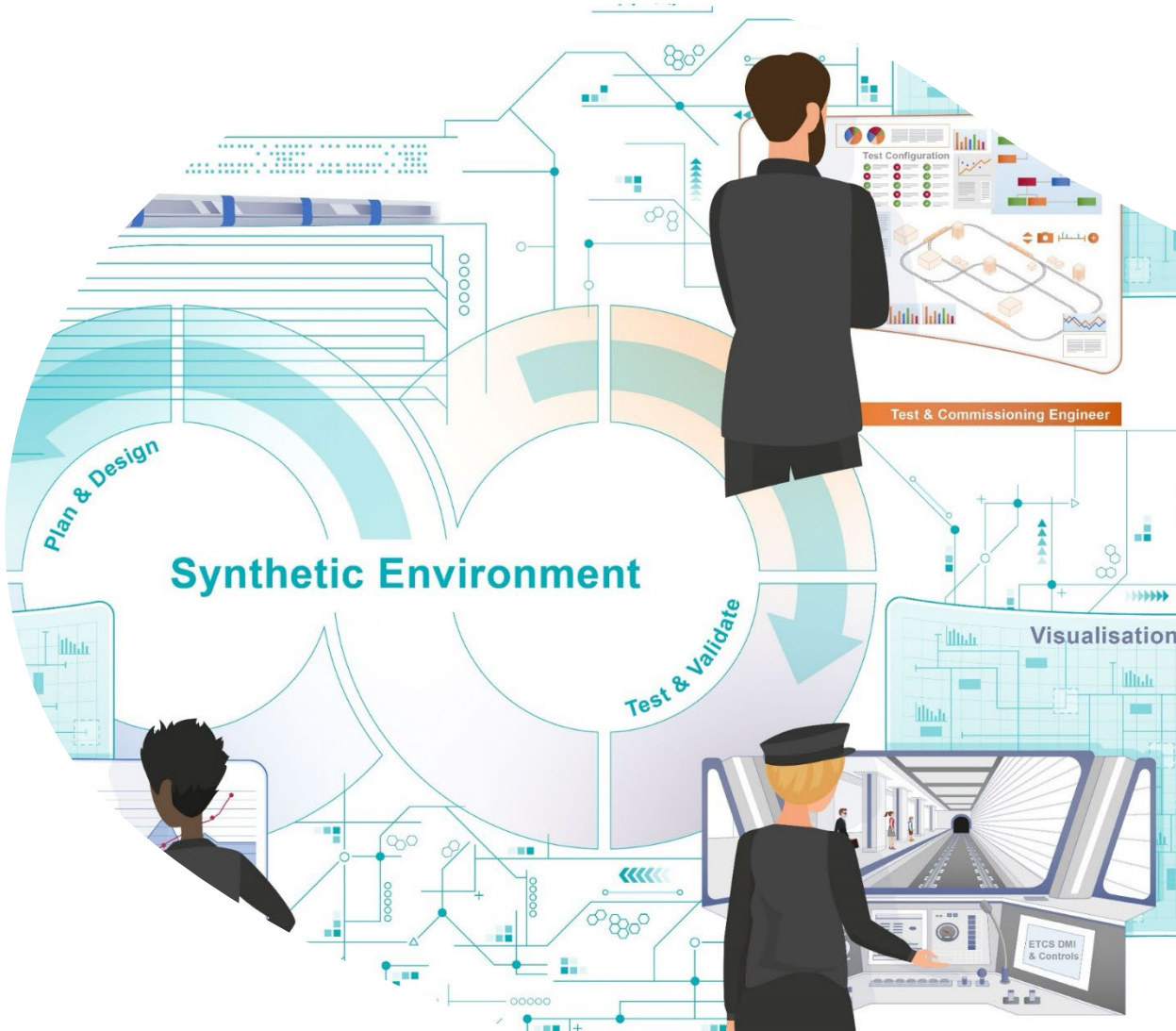
# Digital Transport

# Digital Transport

## Introduction

Arup works with clients to improve their customer journeys, enhance the safety and operational performance of their multi-modal transport networks and construct approaches to minimise the carbon impact of transport schemes.

We can provide advice to deliver future proofed digital transport systems, working closely with clients to deliver services and tools that provide efficiencies and value for money.



# Features

**Features**

- Concept ideation and Visioning, including the production of Digital, Data, and Technology (DDaT) Strategy. Operational and functional requirement capture and development of Green Book compliant DDaT Business Cases.
- User-focussed transport service and operational system design, including UCD, data architecture & engineering, and cloud, to create services, systems, platforms and hubs, delivering digital and infrastructure-based solutions.
- Data governance and audits, ensuring mobility and infrastructure data is treated as an asset and is fit for purpose.
- Exploiting the value from data including business models (open data, smart data, accessibility) and application development encompassing data science, advanced analytics, machine learning and AI (Artificial Intelligence) (e.g. AI-DSS).
- Digitalisation of transport network operations and control centre applications, services, data, and infrastructure.

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# Features

## Features

- Data-rich analysis and presentation through GIS / geo-analytics, gamification, and visualisation techniques (e.g. Airport Scenario Modelling).
- Producing and advising on the development and configuration of transport data models, Digital Twins, Agent Based Modelling, and network simulations (e.g. City Modelling Lab).
- Providing cyber security assurance and resilience approaches to systems and organisations.
- Provision of software solutions including infrastructure asset management and automated inspection applications (e.g. AssetTrust & Loupe 360) and EV charging planning tools (e.g. Demand4Chargers)
- Advising on the design and delivery of location-based services, IoT infrastructure, mobile and floating fleet data, including connectivity (V2V, V2I, V2X) and autonomy (CAV).

# Digital Solutions and Products

Charge4All | Developed to assess street level charge point suitability (based on parking spaces, substations, demand for charging etc.).

Demand4Chargers | Determines the energy demand associated with EV trips and calculates the peak power/charge point quantity required to meet that demand forecast.

City Modelling Lab | Provides Arup with the technical capabilities to undertake advanced simulation – specifically focusing on Agent and Activity Based Modelling.

Airport Scenario Modelling | Allows airports and stakeholders to view, model, and change their campus from a range of perspectives- such as potential business scenarios, proposed changes to layouts, or different user personas.

# Digital Solutions and Products

Our digital solutions and products for Digital Transport encompass:

AssetTrust | Helps asset owners and managers who wants to maximize the efficiency of their urban road & street maintenance, by providing proactive advice through a fully automated AI powered solution.

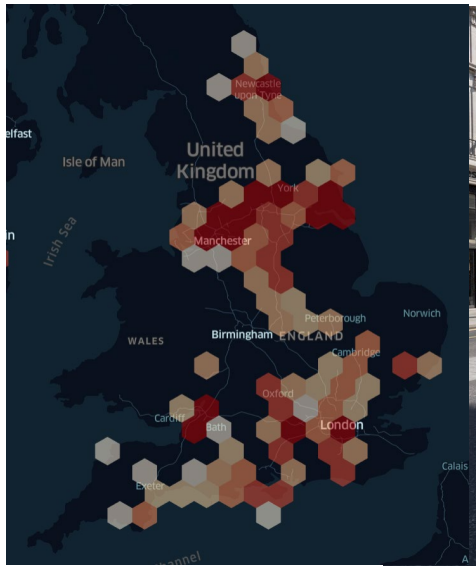
Loupe360 | A tunnel inspection visualisation and analytics platform that leverages the power of 360-degree imagery and computer vision, to enable rich visualisation and asset analysis, supported by machine learning defect detection, inventorying and condition rating analytics [https://www.arup.com/services/tools/loupe-360]

Charge4Fleets | Developed to support transitioning fleet routes from petrol/diesel to electric or hydrogen.

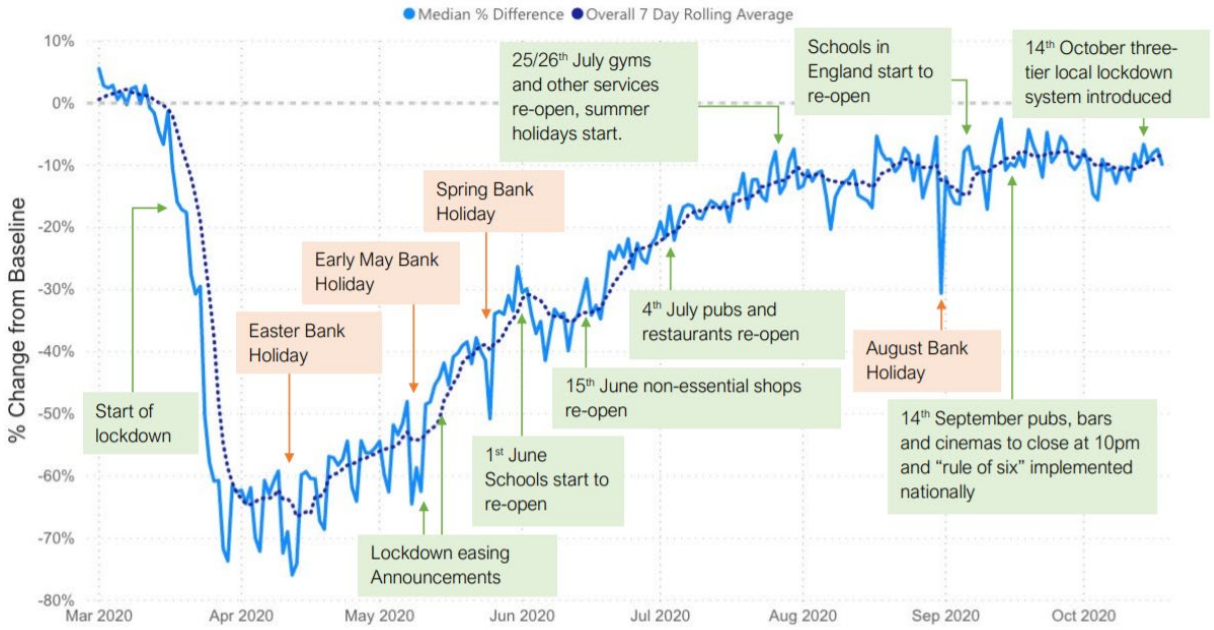
# Benefits

## Benefits

- Scalable, secure digital products and services that meet user needs
- Multi-disciplinary delivery team, including user researchers, service designers, business analysts, highways experts, future mobility specialists, and data scientists that combine transport expertise and digital capability
- Multi-modal international expertise delivering scalable multi-modal solutions for local, regional, and national transport network operators
- Delivering digital solutions that drive carbon reduction, aligning with UN SDGs
- Upskilling and knowledge transfer to the client organisation to support delivery of commissions and sustainable handover of skills
- Trusted advisor to national transport bodies providing knowledge and experience to commissions to support operational decision making
- Providing support for digital transformation activities to ensure forward compatible approaches are adopted
- Reduced risk associated with systems delivery on large complex projects
- Robust programme management adopting a flexible Agile approach to digital transport projects, managing risks and assumptions
- Future transport system development experience supported by modal domain experts and our Foresight and Research teams





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**COVID19 Data Pipeline, Department for Transport**

# Developing a Local Authority traffic data pipeline and analytical dashboards reporting the local impact of COVID19

Arup were tasked with developing a data pipeline to understand the impact of COVID19 lockdown on local roads. Within 3 months, our team launched a cloud hosted service consuming traffic, cycling, and parking datasets from over 50 Local Authority areas, engineering that data into a common format, and publishing weekly reports and PowerBI dashboards. This provided DfT with valuable insight into the impact of lockdown restriction changes. Awarded ITS UK Project of the Year 2020.

**Department for Transport | U.K.**
**2020-2023**

**https://www.arup.com/projects/covid-19-local-authority-travel-and-transport-data**

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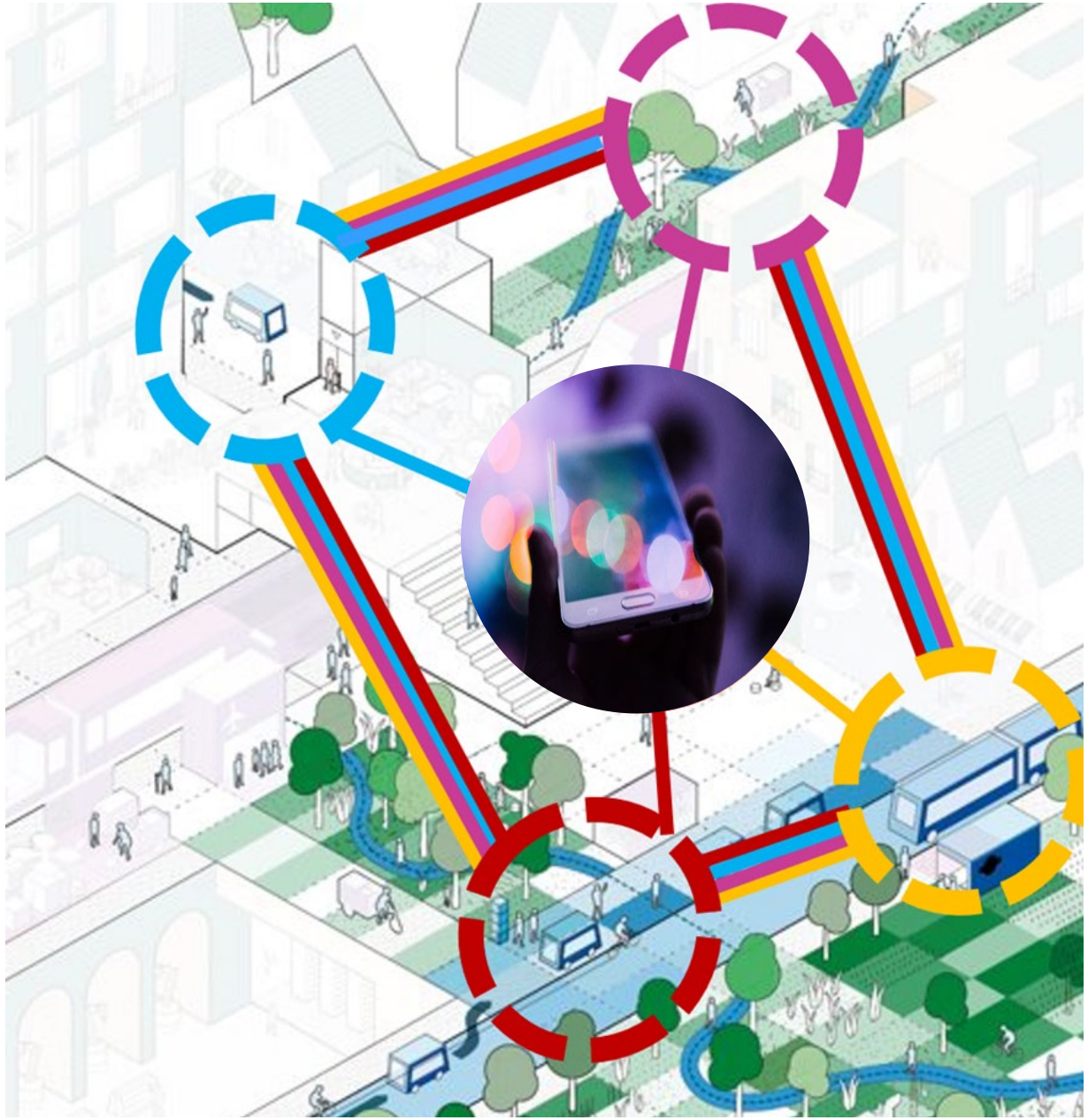
## Data Science Partnership, National Highways

# Providing data science capability to develop innovative data driven solutions

Arup are National Highways appointed data science partner providing call-off capability to develop new innovative solutions in a fast-paced Agile environment. Our project teams are building solutions in National Highways Azure Cloud environment including a productionised customer chatbot for instant information regarding traffic information, roadworks, and road defects.

**National Highways | UK**
**2023-Ongoing**



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## AI-DSS for Enhancing Transportation Incident Management, Virginia Department of Transport

# Using an Artificial Intelligence Digital Support System to operate and manage a multimodal transportation network

Arup is supporting the Virginia Department of Transportation (VDOT) in the development of an Artificial Intelligence Digital Support System (AI-DSS) for a multimodal transportation network that will review and evaluate current transportation conditions, predict future conditions, and help agency operators make informed decisions when cooperatively managing recurring and non-recurring circumstances that impact their transportation networks.

**Virginia Department of Transport | Virginia | U.S.A**
**2023-Ongoing**


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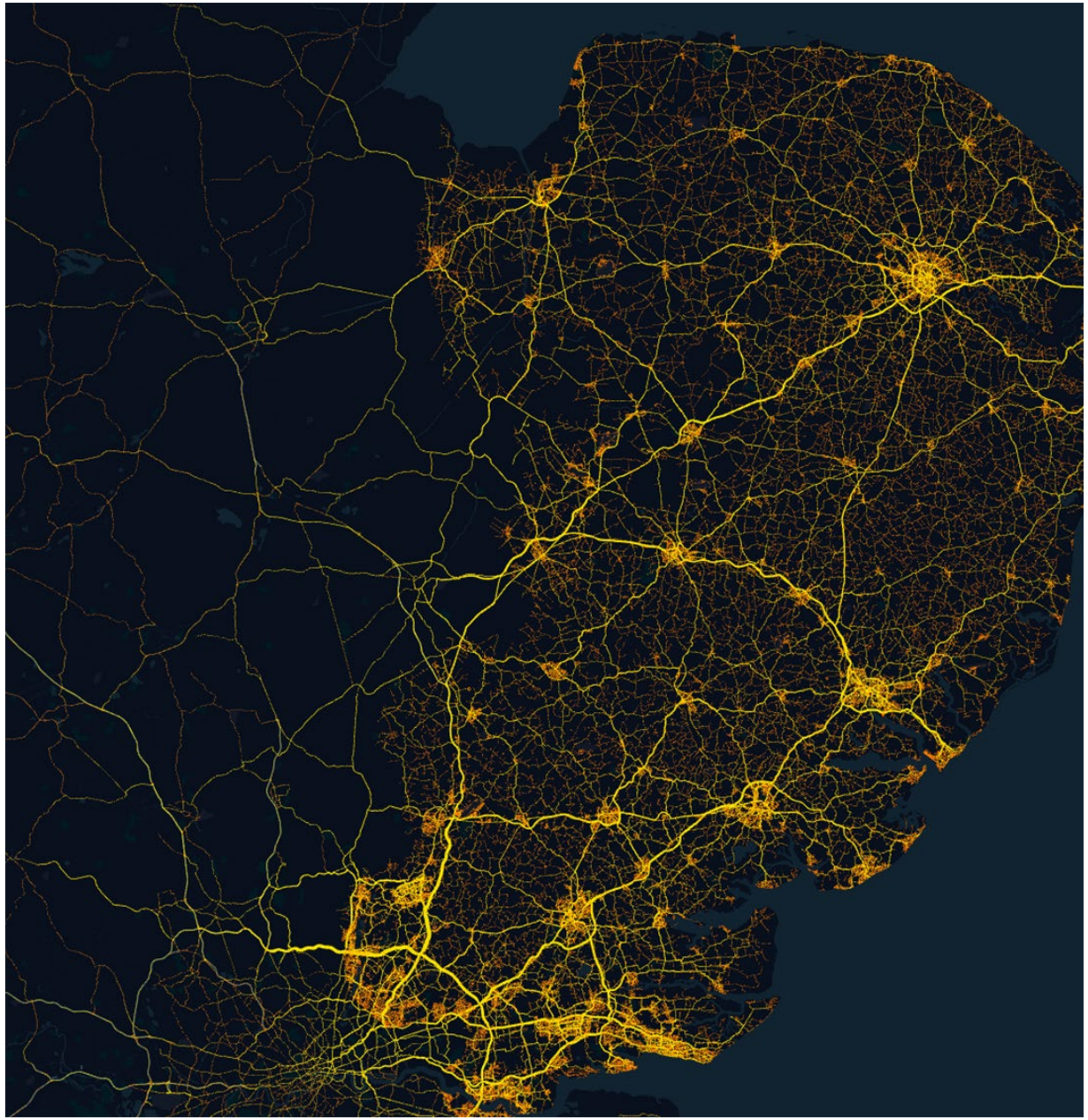
## Port of Dover Masterplan Digital Workstream, Port of Dover

# Integrating technology across marine, land and shoreside functions

Digital transformation is a key pillar of Port of Dover's 2050 vision. As part of the development of a multi-disciplinary masterplan focused on preparing for a digital and automated future, Arup provided recommendations on technology enabled solutions, to help manage operations seamlessly in line with growth targets, and enable strategic interventions linked to decarbonisation, sustainability, and resilience. This will ultimately result in informed operational decision making.

**Port of Dover | U.K**
**2023-Ongoing**



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## BEhaviouR & Transport: Impact and Equity (BERTIE) Activity & Agent Based Model, Transport for East

# Creating a synthetic population to analyse expected changes in traveller behaviours

Arup developed BERTIE for Transport for East, an activity and agent-based model that uses a synthetic population to analyse expected changes in traveller behaviours across interconnected multi-modal transport networks based on a range of demographic parameters. BERTIE has provided key insights into data such as EV uptake rates in the region, decarbonisation, active travel usage, equity, changes in mobility costs, and trip patterns.

**Transport for East | U.K**
**2023-Ongoing**

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