Milton Keynes, Future of Mobility in a Growing City

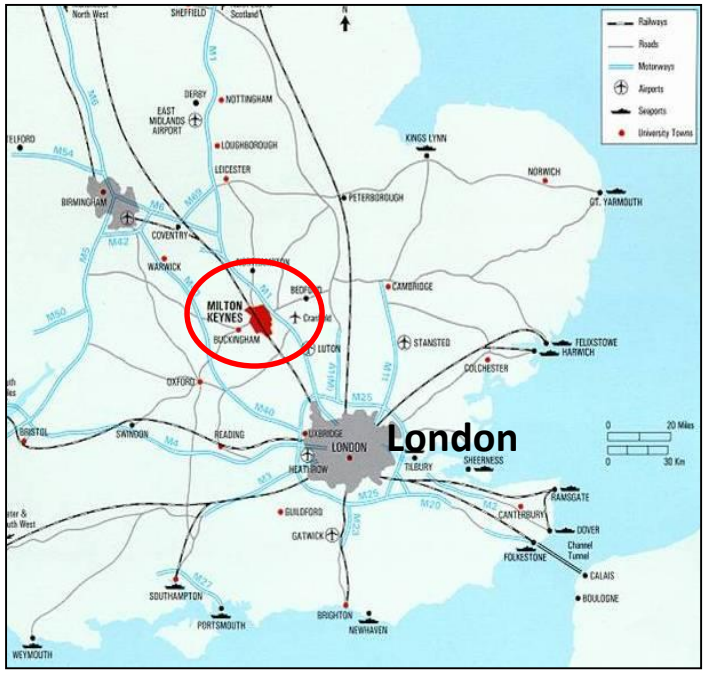
Developing smart, shared, sustainable mobility for a growing smart city

E-Scooters Trial

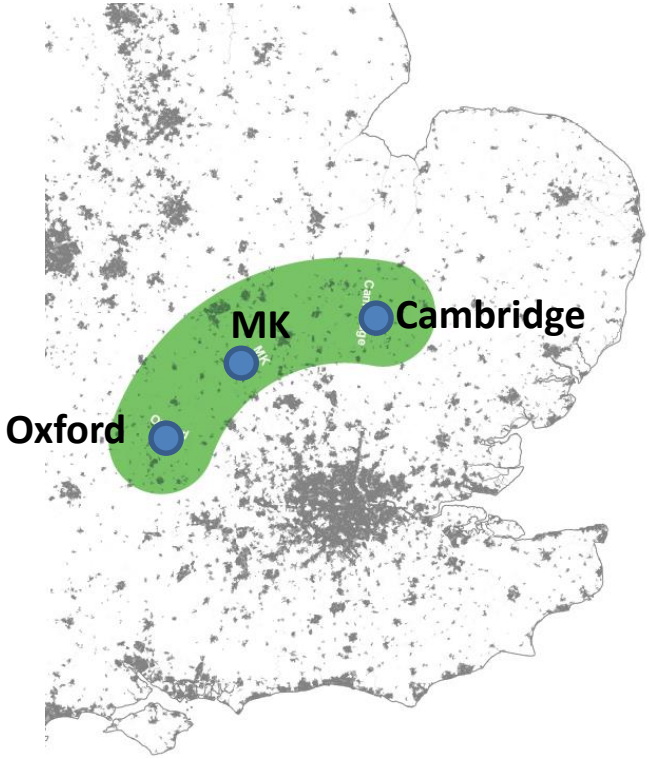
Brian Matthews
Head of Transport Innovation
Milton Keynes Council

milton keynes council

Location



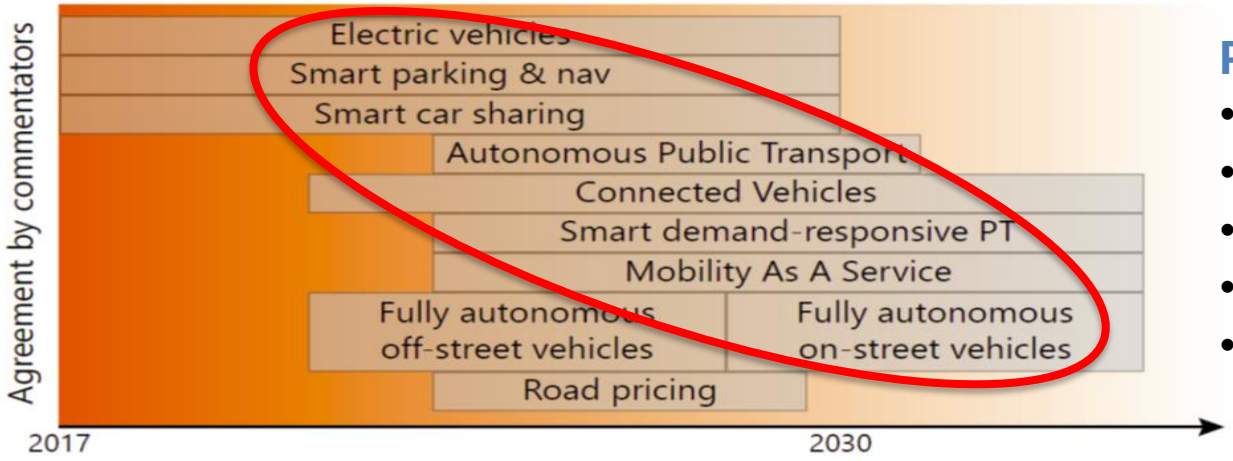
London:	88 km
Birmingham:	110 km
Oxford:	74 km
Cambridge:	77 km



Cambridge - Milton Keynes - Oxford Innovation Arc

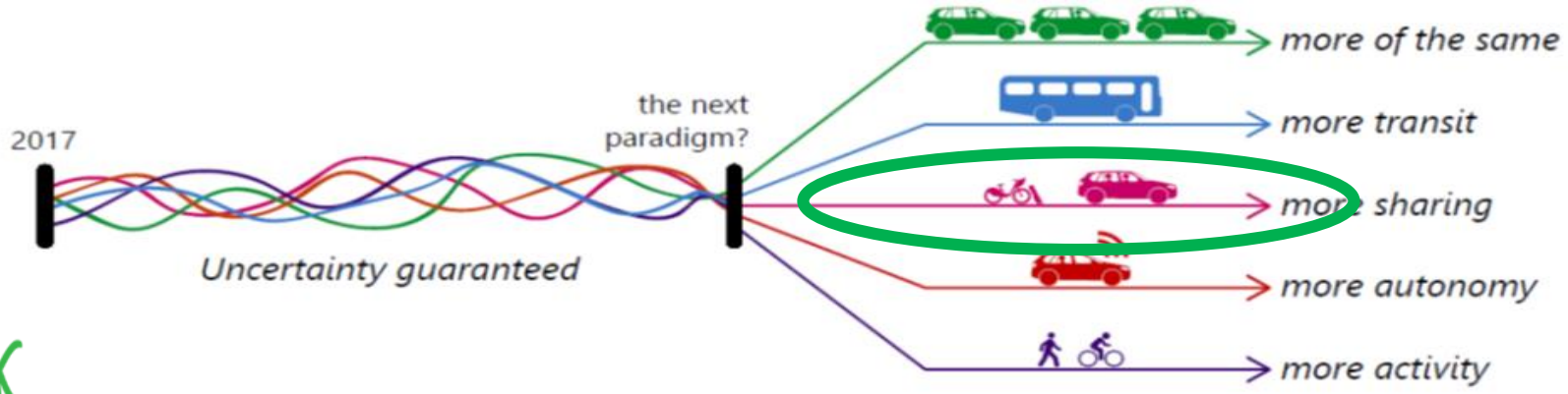
"UK's Silicon Valley"

Defining Objectives/Strategy



Priorities – Objective Driven

- Safety
- Capacity
- Mobility for all
- Productivity
- Carbon reduction



milton keynes council

New Mobility Solutions for Milton Keynes

Electric Vehicle Experience Centre

Electric bus services: wireless induction charging

Rapid charge “filling stations”

Lime bikes: electric cycle hire

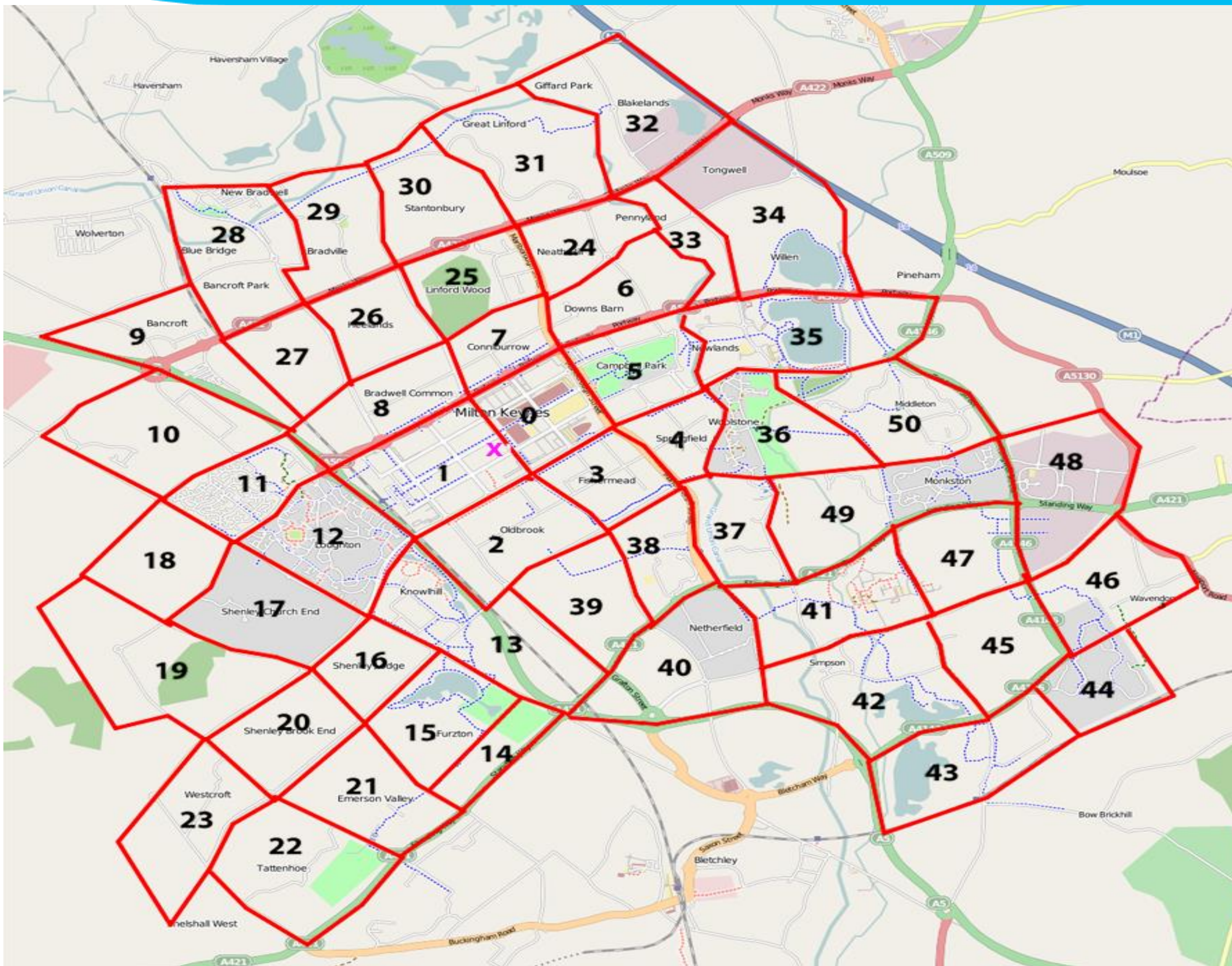
Driverless pods

Connected and Autonomous Vehicles

Logistics - robot delivery service

Via Van: on demand shared service

E - Scooters



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Haversham
Giffard Park
Blakelands
Great Linford
Tongwell
Moulsoe
New Bradwell
Wolverton
Blue Bridge
Stantonbury
Bradville
Pennyland
Neath Hill
Willen
Pineham
Linford Wood
Bancroft Park
Downs Barn
Bancroft
Conniburrow
Newlands
Campbell Park
Bradwell Common
Milton Keynes
Middleton
Woolstone
Springfield
Fishermead
Monkston
Standing Way
Oldbrook
Loughton
Knowlhill
Wavendon
Shenley Church End
Netherfield
Shenley Lodge
Simpson
Shenley Brook End
Furzton
Westcroft
Emerson Valley
Bow Brickhill
Tattenhoe
Bletchley
Whelshall West
Buckingham Road
Bletcham Way
Saxon Street
Grafton Street
Monks Way
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A509
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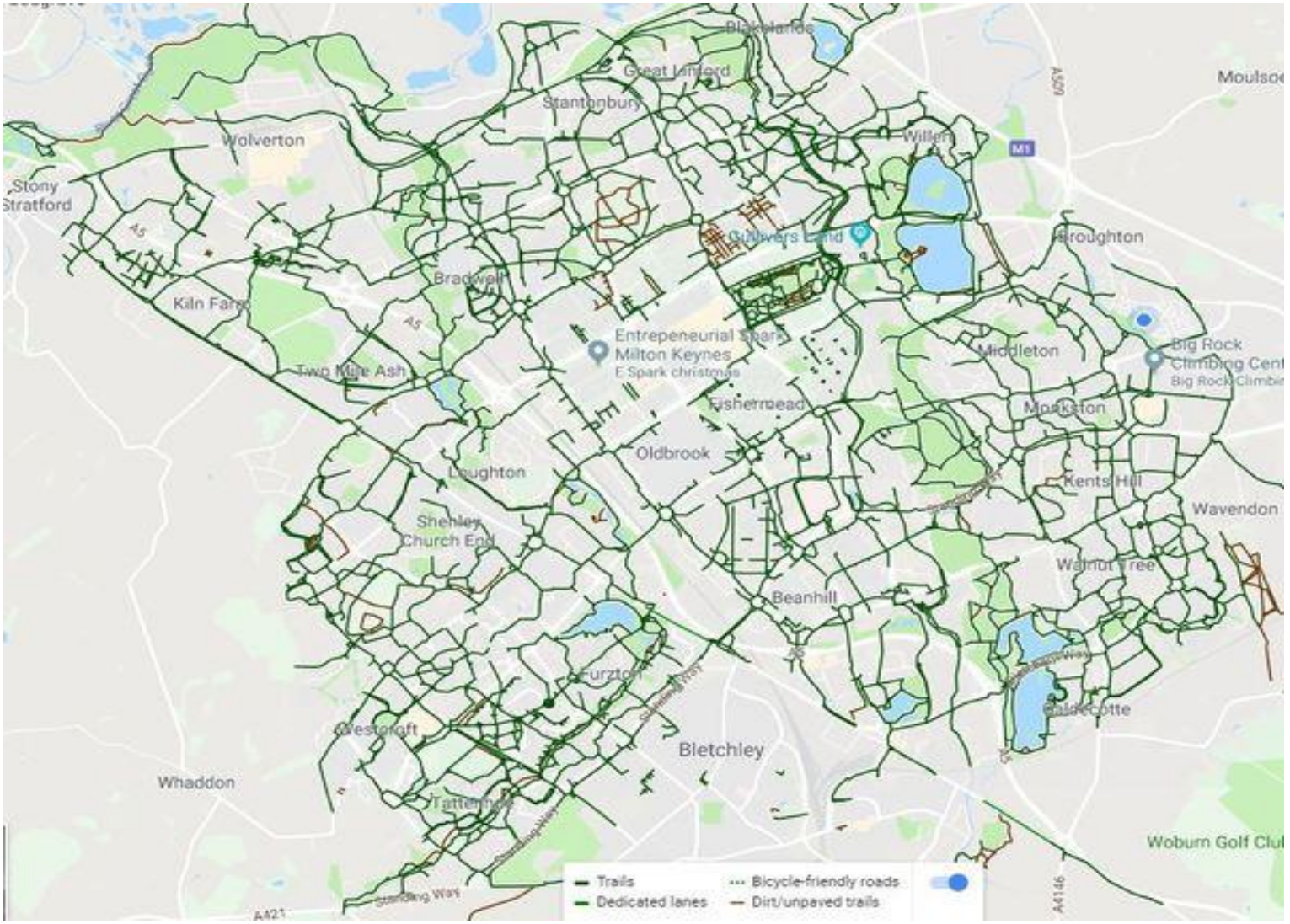
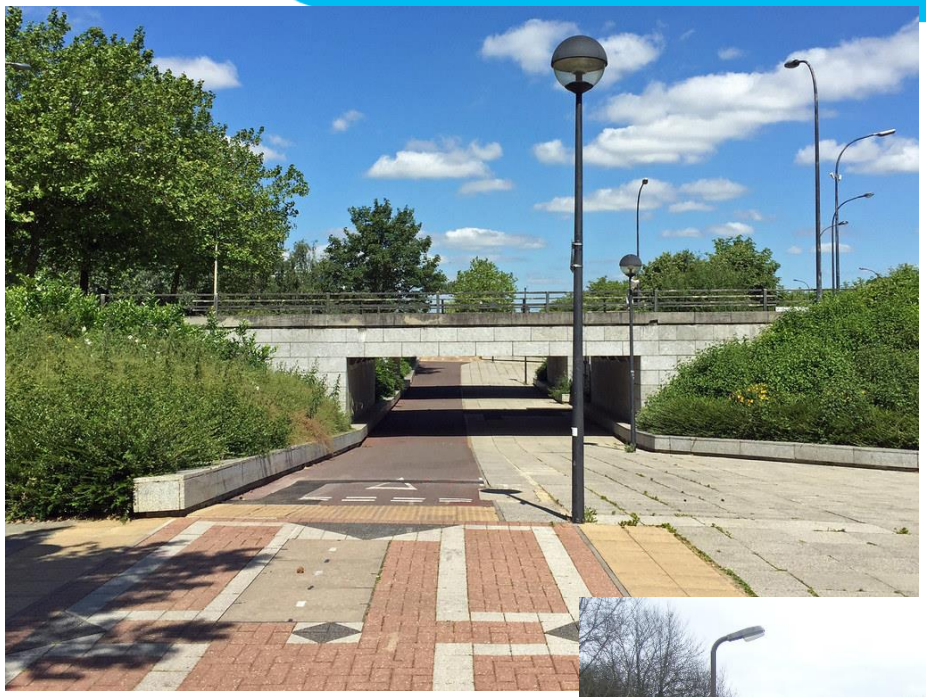
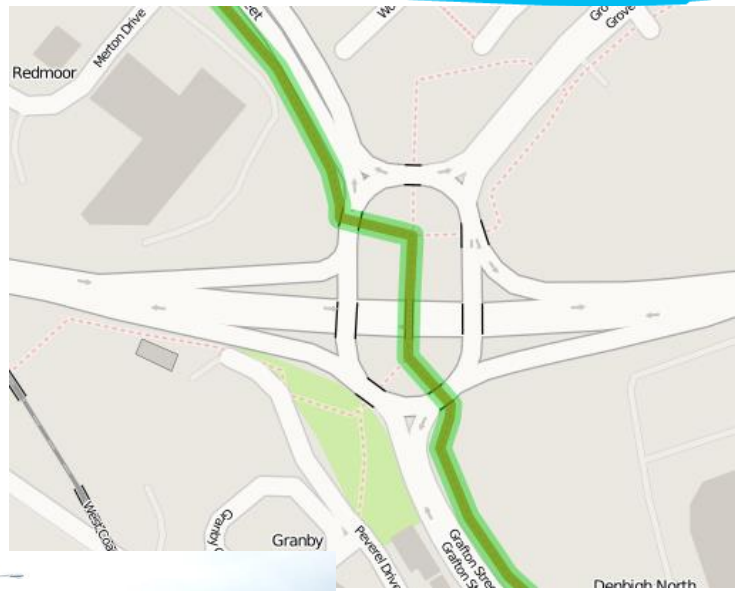

Blackstones
Great Linford
Stantonbury
Moulsoe
A509
Wolverton
Willen
M1
Stony Stratford
A5
Gulliver's Land
Broughton
Bradwell
Kiln Farm
Entrepeneurial Spark
Milton Keynes
E Spark christmas
Middleton
Big Rock
Two Mile Ash
Fishermead
Monkston
Oldbrook
Loughton
Kents Hill
Wavendon
Shenley
Church End
Walnut Tree
Beanhill
Furzton
Caldecotte
Westcroft
Bletchley
Whaddon
Tattenhoe
Woburn Golf Club
Grand Union Canal
A421
A4146
Trails
Dedicated lanes
Bicycle-friendly roads
Dirt/unpaved trails




Redmoor
Merton Drive
Granby
Denbigh North

Approach – Urban Laboratory

Open city for large scale trial, with city setting agenda

Invited Expression of Interest

Set objectives/ priorities

1. Safety – what was approach
2. How to encourage shift to short range trips
3. Responsiveness
4. Support economic recovery
5. Compliance with legal requirements
6. Public engagement strategy

Made it clear we were minded to select more than one operator

- 13 returns
- 2 non-compliant
- 3 shortlisted three to develop partnering protocols in advance of launch

Launched 24th August

SPIN

GINGER

Lime

Each operator licensed for up to 300 scooters

- Operate on MK Redways
- Operation to cover all MK UA area, but planned expansions was agreed
- No formal docking stations - wanted to support anywhere to anywhere operation (had network and ‘space’ to do this – but be responsive to issues)
- Use Geo fence technology to create no ride and slow zones


Milton Keynes Central
JUST
APP
shop
© Jeff Spicer/PA


110cm
53cm
107cm
107cm

Scheme hugely popular in MK

- 30,000 rides within first two months
- Approaching 150,000 rides now.
- 2-5 rides per scooter per day
- 10-13 mins average ride
- 2- 4km average journey
- 60% replacing car trips (inc taxi)
- City centre focus for trips

- Expansion plans in train

Successes

- All operators hugely committed, and responsive
- Uptake above expectations
- New technology being trialed to improve capabilities /safety.
- Stakeholder engagement and support strong
- Created employment

Thank You

Brian Matthews,
Head of Transport innovation, Milton Keynes
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Nottingham City Council

Bigger, Better, Cheaper and more environmentally sustainable

Passenger Transport Service.

Robin Radford – Transport Service Manager

1. Introduction

- 2. Change In Context
  - Old Fleet
  - Old Logistics
  - Old Ways of Working
- 3. New Business Plan
  - New fleet and EV’s
  - New logistics
  - New Ways of Working
  - Outcomes
- 4. COVID-19 and Future Challenges
  - Building resilience and responding to pandemic
  - Fluctuations in supply and demand
  - Nottingham City Council – Carbon Neutral 2028
- 5. Q&A

2. Change in context

- Over the last six years, our Passenger Transport service has seen huge changes in its operation. During a period of local government cuts and large challenges within the adult and social care sector, our transport team have adapted to provide a bigger, better, cheaper and more environmentally friendly service than ever before.

Old fleet

- Traditional coach built vehicles
- Poor fuel economy
- Poor accessibility
- Noisy and uncomfortable ride
- Vehicles had poor image to the public

Old Logistics

- Route planning on maps
- Route cards containing confidential information
- Unknown number of journeys and capacity
- Unknown how long a route actually took
- Demand met with inconsistency

Old ways of working

- Shift patterns set in stone
- Overtime costs incurred
- Free social service – or subsidised for group activities
- Contracts issued without full assessment of value for money
- No ambition to compete for work

3. New Business Plan

- In 2013, Nottingham City Council's Passenger Transport service was considered too expensive and too inefficient to run and an options appraisal was undertaken to consider outsourcing the transport provision to external providers.
- Fortunately, the decision was made to re-write the business plan, appoint a new team and invest in the fleet, staffing, and logistics.

New Fleet

- Instead of the traditional, coach-built vehicles, we decided to purchase 34 vans as the cost was far lower
- The new fleet was based on a higher specification of vehicle, improving the quality of provision to customers and more accessible – wider heavy duty tail lifts, side entry, flat floor, euro 5 emissions.
- extended vehicle life from 7 to 10 years.
- The decision has resulted in a reduction in vehicle costs, from procurement through to maintenance and fuel and resulted in a far lower cost per journey.
- New fleet allowed more capacity for wheelchair specialisation – up to 4 on a journey – leading to domination of the market place and realising £254K cost savings. We now carry more wheelchairs than any other provider.

New EV's

- New procurement matrix produced for sourcing first fully electric minibuses to be operated by a local authority to use on our high dependency runs, based on experience that can now be offered to other LA's.
- HD - Most passengers on this service have respiratory conditions and carry oxygen; it therefore felt counter-intuitive to transport them in a diesel vehicle emitting emissions, particularly when they are at the back of the vehicle using the tail lift.
- In addition, the zero emission vehicles create less noise and vibrations which is also appreciated by the children, some of whom are sensitive to noise and pollution.
- Two of the buses even have solar panel roofs, generating clean energy to help run the vehicle – a true first for minibuses and hopefully a sign of things to come!

New Logistics

- New route planning software means accurate route planning
- Sensitive information kept secure
- Known capacity, and number of journeys - filling spaces on our buses with people who had previously used taxis resulted in the service carrying 3% more on the same number of vehicles.
- Insourcing - a double saving to the council: not only realising economies of scale, but additional cuts have been made in external work which is, on average, are more expensive per person transported.
- Accurate timetable for routes helps costings
- Demand can be met at anytime – such as taking on another LA's transport at short notice.
- Muster points for SEN routes saving £200K.

New way of working

- Split shift patterns aligned with route requirements – no overtime!
- Double routes led to ‘sweating of assets’ and serving both Adult Social Care and SEN in the same day.
- Focus on core services and charging for transport led to costs to be truly appraised, providing best value and regular reviews.
- Contractors assessed regularly for cost, quality and value for money.
- Insourcing and outsourcing based on cost analysis.
- Mixture of contracts to suit demand.

Outcomes

- The changes implemented over the last six years have taken the Passenger Transport service from a point where the vehicles, logistics and working practices was so unsustainable that it was going to be outsourced. The impact of this would have been 100 jobs. Instead, we are now one of the most cost-effective Special Educational Needs (SEN) providers in the country.
- In fact, Nottingham City Council's Passenger Transport team now offer the 13th cheapest SEN service to run in England in 2018/19 and the 2nd cheapest when compared to our statistical neighbours (table below). Nottingham City Council's SEN transport is less than half the average cost of SEN transport in England[1].
- We are possibly one of the only LA's to insource the most vulnerable high dependency complex needs transport in the country –this has kept quality high and costs controlled and reduced.
- First LA to design and operate EV's on internal SEN passenger transport at the time.

Table – Bench marking data

Authority	2.1.4 Home to school transport (pre 16): SEN transport expenditure (C)
Wolverhampton	£5
Nottingham	**£34**
Coventry	£36
Sandwell	£40
Kingston upon Hull	£45
Derby	£47
Southampton	£52
Manchester	£54
Bristol, City of	£73
Birmingham	£83
Salford	£84

https://www.gov.uk/guidance/section-251-2018-to-2019#section-251-benchmarking-data

4. COVID-19 and Future Challenges

- In March 2020, life as we know it changed when the world was presented with a virus that was not fully understood but was rapidly taking lives.
- We all tried our best to respond and keep vital specialised transport services operating.
- Not only was our work and social lives changing but so was technology –Teams, social media and distance learning.
- How we overcome our future challenges will depend on our ability to adapt and change.

Building resilience and responding to pandemic

- Risks must be assessed and effective control measures put into place in order to prevent infection and increase confidence.
- Treating people as individuals builds resilience for front line staff – bringing your whole self to work.
- Response to infection must be communicated and with a view to the long term resilience – communicate with health professionals, health and safety professionals, trade unions and customers.

Fluctuations in supply and demand

- Challenges ahead for every private enterprise – resilience in the market place may be low leading to loss of operators meeting social care and SEN demand.
- Lack of parent/carer confidence in their child travelling to school safely or choosing to home school leading to drop in demand.
- Future pandemic outbreaks possible and unpredictable, leading to lack of investment in the market place.

Nottingham City Council – Carbon Neutral 2028

- Political determination to progress to carbon neutral, a great sign to encourage investments in EV's – leading to opportunity cost savings and positive environmental outcomes.
- Rapid investment in research and development of EV technology by coach builders and vehicle manufacturers a great opportunity for customer involvement in the procurement process and fit for purpose vehicles.
- Cleaner and more sustainable vehicles for vulnerable children and adults that gives a quiet and comfortable journey that add value to the quality of life and the service.

5. Q&A

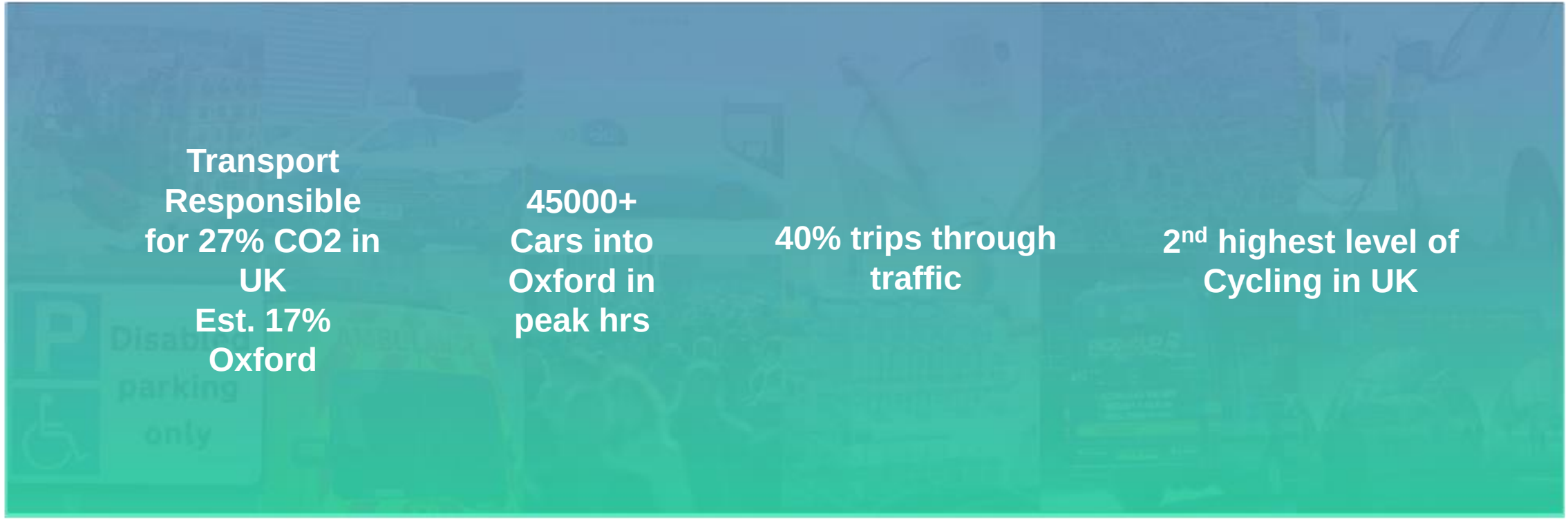
- My name is Robin Radford, thank you for listening to me and giving me your time today.
- Please feel free to ask questions and I will do my best to answer.

Embracing the Future of Mobility.
Local Government perspective

Llewelyn Morgan - Head of Innovation Oxfordshire County Council

OXFORDSHIRE COUNTY COUNCIL

Transport Impact In Oxford



Science Transit Strategy

Innovation in Transport

- Creating an ecosystem of innovation
- Oxfordshire Living Laboratory

Intelligent mobility

- Optimised movement of people irrespective of mode

Key infrastructure Improvement

- Improve connections between key locations along the knowledge spine

Key route & service enhancement

- Improve connections between key locations along the knowledge spine

Multiple lead deliverers and project partners – consortium approach to project delivery and funding

OXFORDSHIRE COUNTY COUNCIL

A New Approach in Transport Planning

Predict
and
Provide

Decide
and
Provide

Iterate
and
Adapt

OXFORDSHIRE COUNTY COUNCIL

Green Energy

Public Health

Active Travel

Thriving Communities

INNOVATION HUB

Thriving People

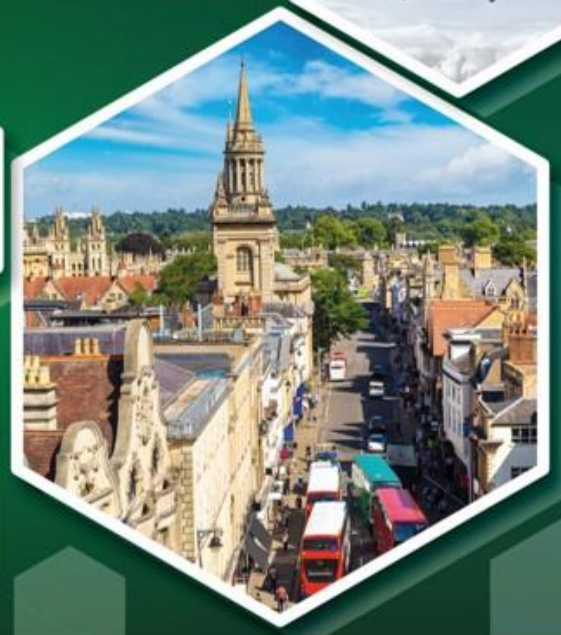
Thriving Economy

Electric Vehicles

Connected Autonomous Vehicles & Drones

Smart Infrastructure

Connected Autonomous Vehicles



- Trials
- Standards
- Planning
- Communications
- Network Management
- Infrastructure
- Simulation/Modelling
- Education
- Strategy & Policy
- Drones

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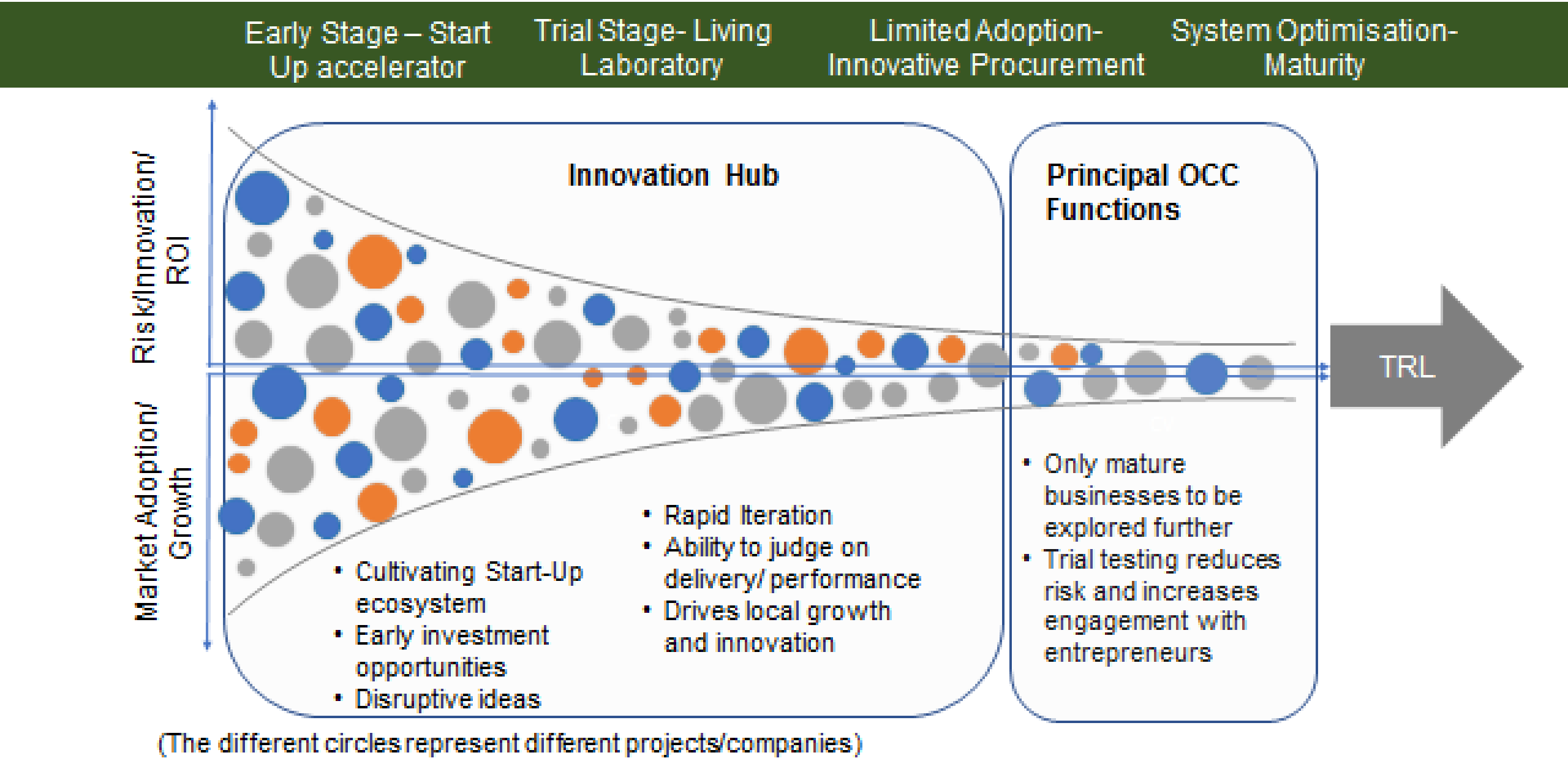
Innovation Funnel Diagram



(The different circles represent different projects/companies)

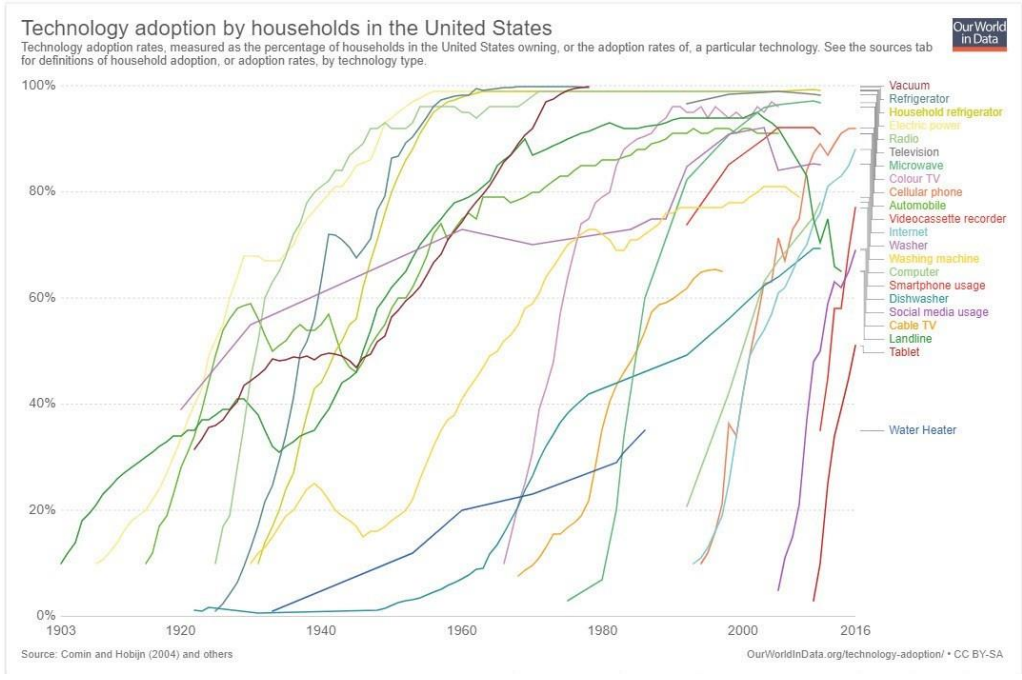
Why are Local Authorities essential

Multiple Timescales

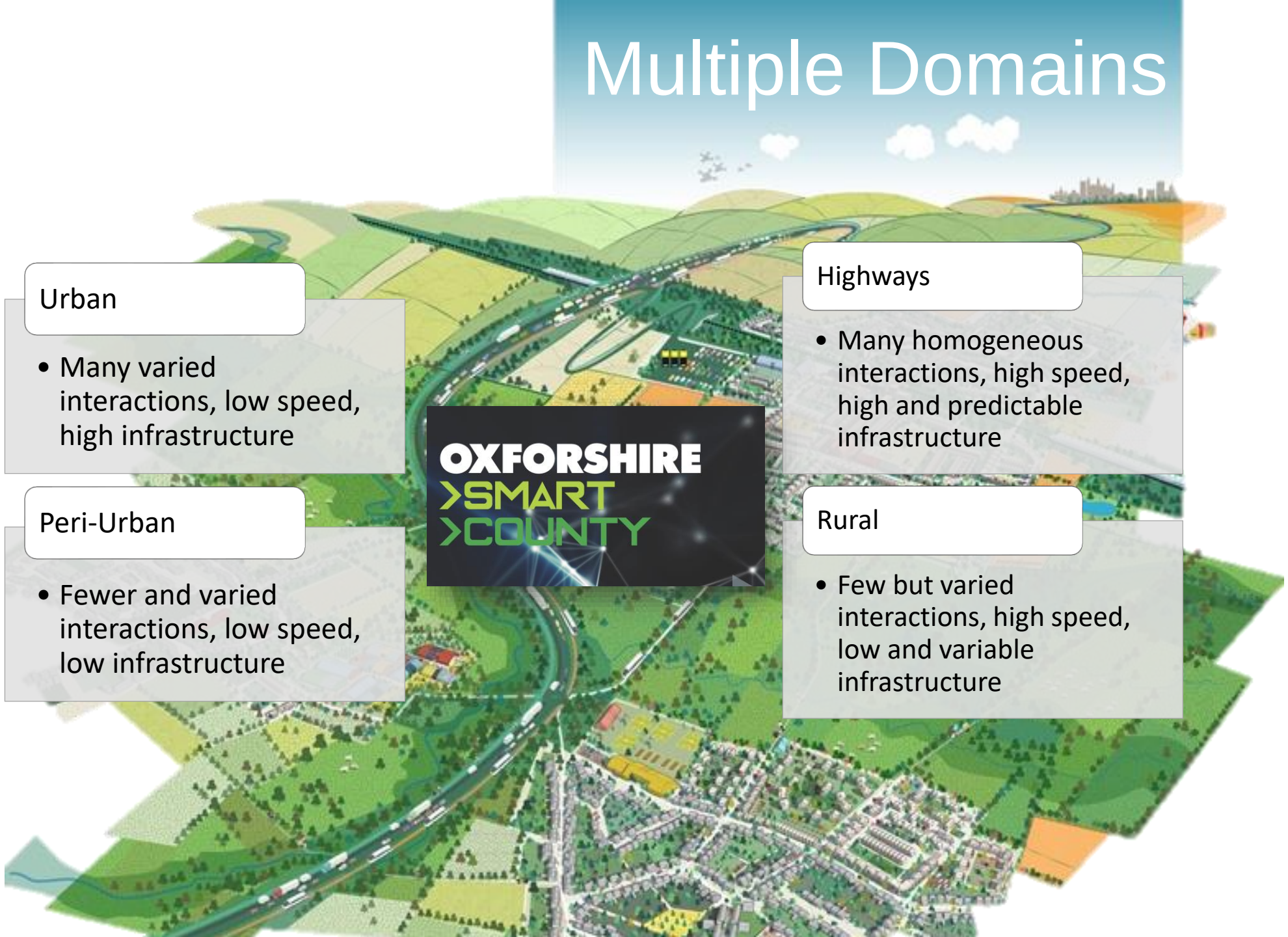
Now/Minutes	• **Emergency/Incident Management**
Minutes/Hours	• **Traffic Management**
Hours/Days	• **Asset Management**
Months/Years	• **Education Authority**
Years/Decades	• **Urban Planning**

Oxford Cornmarket 1900

Oxford Cornmarket 1920



Multiple Domains



Urban

- Many varied interactions, low speed, high infrastructure

Peri-Urban

- Fewer and varied interactions, low speed, low infrastructure

Highways

- Many homogeneous interactions, high speed, high and predictable infrastructure

Rural

- Few but varied interactions, high speed, low and variable infrastructure

DRIVEN

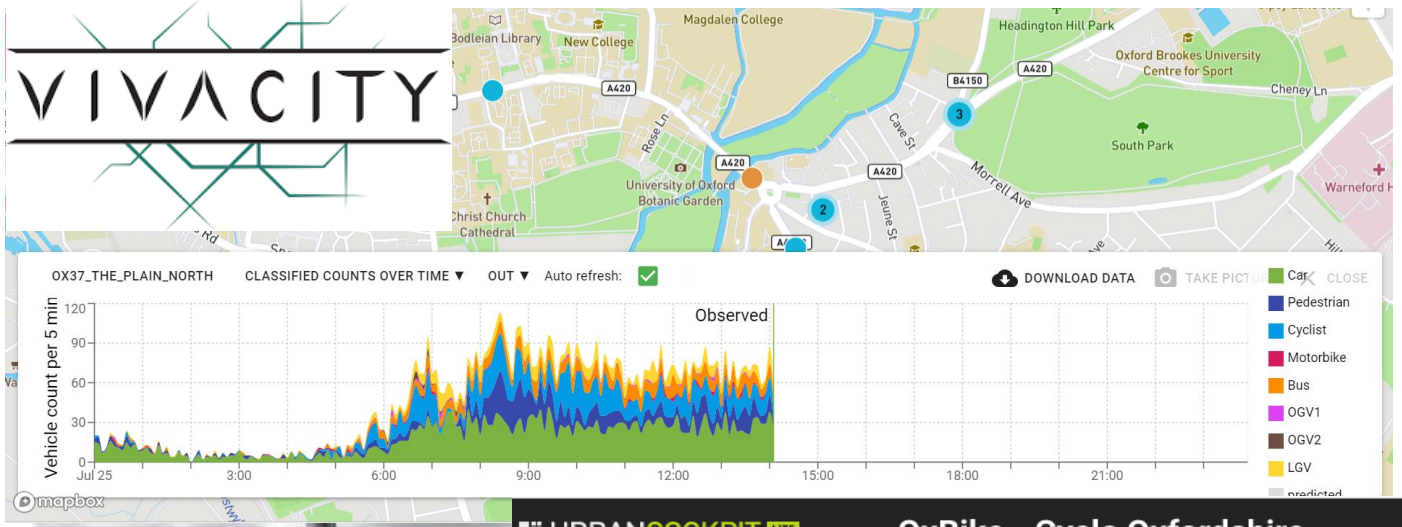
www.drivenby.ai | @DrivenbyAI

Oxfordshire now has a many CAV companies e.g.

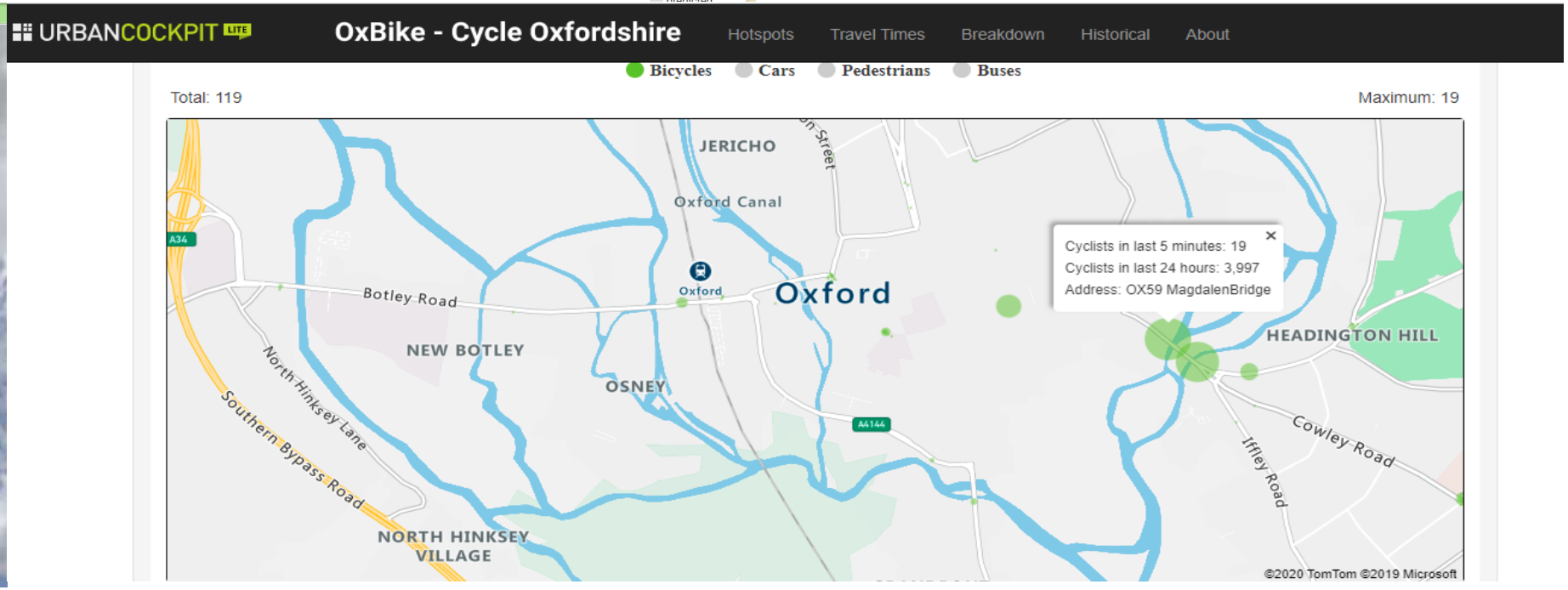
Oxbotica
StreetDrone
RoboRace
Arrival
Latent Logic

Smart Cycle Detection System

VIVACITY



- Cycle detection system for multi-modal roads
- Real time data on the presence and location of cyclists in traffic flows
- Increase road safety for cyclists



NEVFMA – AQ/RT Network Management project

INPUT DATA

Earthsense

- Zephyr AQ sensors on OCC fleet vehicles
- Zephyr AQ sensors on roadside infrastructure
- Data analysis and comparison vehicle vs roadside

OXFORDSHIRE COUNTY COUNCIL

- Local knowledge
- Highways authority
- Historical data provider
- Traffic management system owner

Siemens

- SCOOT data and ITS expert
- Adapt road infrastructure to Zephyr sensors
- cloud-connected edge module to link MOVA to SCOOT
- Adapt loops to provide count data

REAL-TIME TRAFFIC MANAGEMENT SYSTEM

aimsun.live

Data Manager

Recurrent data feeds for monitoring and visualisation

Historical Data → Traffic patterns, Pattern Statistics, Typical day OD matrices, Changes in supply, PT and signals

Air Quality predictions

Zephyr measurements + Traffic data + Simulated outputs → Air Quality predictions

Real time SCOOT simulation

Quality manager

Simulation Storer

Simulation platform

Oxford Microscopic Dynamic Model

- Micro model
- Detailed infrastructure representation
- Dynamic model, lane based, individual generation of vehicles
- Scenario Manager for complex option testing

OUTPUTS

aimsun.live

Interactive VISUALISATION PLATFORM

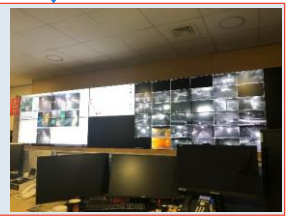
MONITORING: current traffic and air quality conditions for the whole network

PREDICTIONS: short-term predictions of traffic and air quality conditions for the whole network

STRATEGIES: comparison of different scenarios to improve traffic and air quality conditions

OBTENTION OF BEST STRATEGY FOR EACH SITUATION IN REAL-TIME

OCC UTMC Centre



BBC Oxford, OCC Twitter

HE Traffic Management Centre

aimsun. highways england SIEMENS Ingenuity for life EARTH SENSE

Project LEO

Local Energy Oxfordshire

Delivering a transformative integrated smart local energy system to maximise prosperity from local energy systems and demonstrate new value creation opportunities.

Scottish & Southern Electricity Networks

University of Oxford

Oxford Brookes University

EDF Energy

Oxford City Council

Open Utility

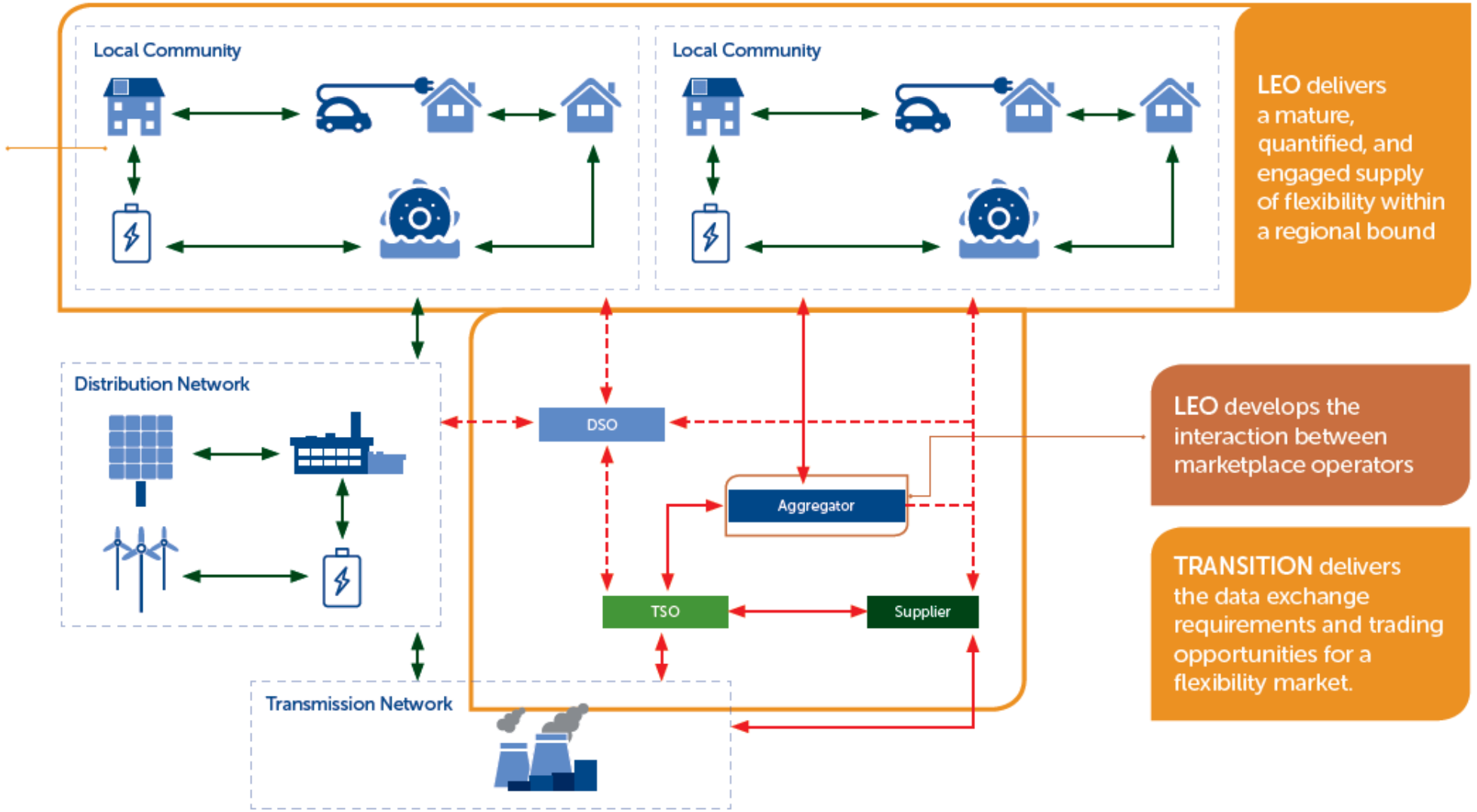
origamienergy
shaping the future of energy

Oxfordshire County Council

NUVVE

low carbon hub

LEO enables local energy trading



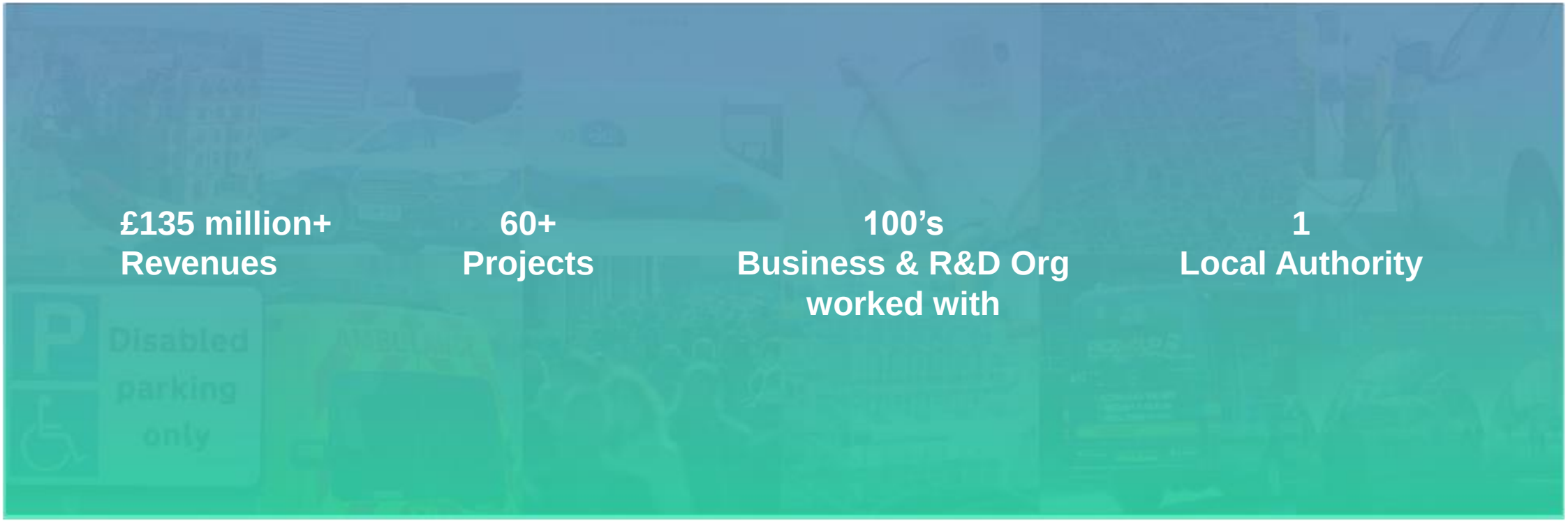
LEO delivers a mature, quantified, and engaged supply of flexibility within a regional bound

Adapted from the SSEN "Supporting a Smarter Electricity System — Our Transition to DSO" paper

LEO develops the interaction between marketplace operators

TRANSITION delivers the data exchange requirements and trading opportunities for a flexibility market.

Our Track Record to date



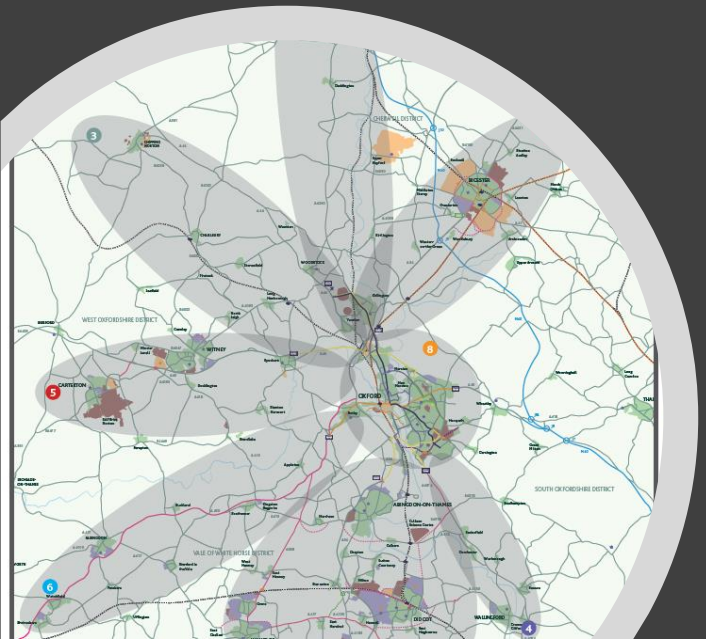
£135 million+
Revenues

60+
Projects

100’s
Business & R&D Org worked with

1
Local Authority

OXFORDSHIRE COUNTY COUNCIL



Living Oxfordshire; County Living Lab Framework

- Ideation, testing, scaling and validating through an integrated system
- Cross sector additionalities
- International partnerships
- Local knowledge and expertise
- Derisk internal and external investment
- Promote growth and equitable adoption

Get in touch; we are here to support others in delivery of innovation in public services

IHub Brochure overview of all our projects https://issuu.com/occir/docs/occ_ihub_q4_2019

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