

22 September 2016

# Urban Modelling using Open Public Data

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**CATAPULT**  
Future Cities

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# Future Cities Catapult

A global centre of excellence  
on urban innovation.

<http://futurecities.catapult.org.uk/>





## MISSION

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WE ADVANCE URBAN  
INNOVATION, TO  
GROW UK  
COMPANIES, TO  
MAKE CITIES BETTER



## OBJECTIVES

Increase the inclusivity, safety, resilience, and sustainability of cities through integrated urban solutions;

Expand the **deployment** of innovative integrated urban solutions in UK cities;

Accelerate the growth of **UK-based businesses** in the integrated urban solutions sector;

Increase **exports** by UK-based businesses in the sector;

Make the UK a recognised **global leader** in innovative integrated urban solutions.



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- We convene businesses, universities, investors, innovators and cities.
  - We test and develop new products and services to accelerate them to market.
  - We enable the adoption of innovations in cities around the world.



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# Urban Modelling using Open Public Data

I will present thee UK  
companies and one research  
project working on urban  
challenges with open public  
data

**Tombolo**

 **transportapi**

**Space Syntax**

  
**URBAN INTELLIGENCE**<sup>®</sup>  
Informing Spatial Decisions

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# TransportAPI

Britain's first, comprehensive  
open solution for transport data

<http://www.transportapi.com/>



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# TransportAPI About

A platform with all the open data feeds you need from key industry sources

TransportAPI aggregates UK-wide transport data and releases it in an API on which developers can write their products

- Live departures
- Timetables
- Journey planning
- Tweet mapping
- Performance indicators
- Fares



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# TransportAPI Open Public Data

Transport data from across the  
UK

Multiple transport related sources  
across the UK, including:

- Traveline
- Network Rail
- Transport for London

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# TransportAPI Non Open Public Data

Social media

Twitter feeds about traveling in the UK

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# TransportAPI Value Added

Make big data manageable –  
supply it in formats that are easy  
to use and simple to integrate

Harmonize data across multiple sources.

Simple JSON formatted data. Easy to  
consume and integrate into back end  
systems or front end websites and  
mobile apps.

No nasty surprises on copyright or IP.  
Got all the clearances sorted and don't  
hold any rights downstream on anything  
that developers make or develop.

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# TransportAPI Business Model

Freemium

Consultancy

The flagship product is the TransportAPI.  
Subscription types: free/grow/enterprise.

Provide consultancy service to raise money.

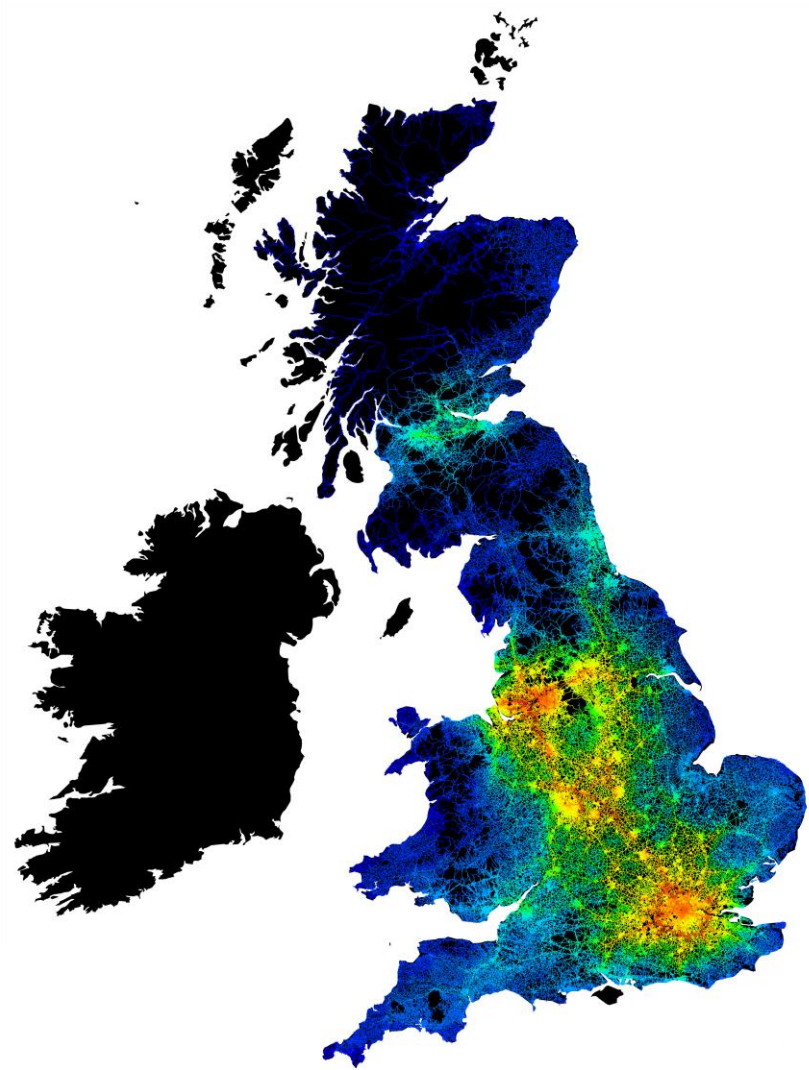
Enterprise customers include: Heathrow,  
First and Ford.

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# Space Syntax

Space Syntax provides expertise in urban planning, transport, building design, social interaction and spatial economics.

<http://www.spacesyntax.com/>



Model: Space Syntax  
Data: Ordnance Survey

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# Space Syntax About

Modelling and analysis of spatial networks

Space Syntax is a consulting company that specializes in the modelling and analysis of spatial networks. These techniques are typically applied in projects relating to the built environment – architecture, urban design and planning – but have also been used in areas outside of this.

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# Space Syntax

# Open Public Data

Road network

National statistics

Space Syntax builds their models on top of open public data provided by, e.g.

- Ordnance Survey (OS)
- Office of National Statistics (ONS)

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# Space Syntax

## Non Open Public Data

Open Street Map

Complement public data with, e.g. Open Street Map.

Own data

15+ years of own data collected for various projects.

Opening own data

Long term intention to open their own data. There are some complications. Clients may be happy with models being opened but raw data on pedestrian movement is more sensitive.



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# Space Syntax Value Added

Insights of skilled experts  
applied to (largely) open data  
using open software

Their analytics software has been  
released as open source.

The software can be applied to open  
data.

Customers return to Space Syntax for  
their experienced staff who know how to  
build models.

Strong connections with The Bartlett,  
University College London (spin-off).

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# Space Syntax Business Model

Consulting

International consulting projects.

Design Studio

Identify ways of optimising the social, economic and environmental impact of projects.

Academy

Create designs that encourage human interaction, providing high levels of access between people and places.

Softwareworks

Training in the use of their evidence-informed tools and techniques.

Research

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# Urban Intelligence

The Planning Policy Information Service for Planners, Architects and other Property Professionals.

<http://urbanintelligence.co.uk/>



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# Urban Intelligence About

Supporting planning policy  
research

Urban Intelligence is a property technology company that is aggregating planning policy data and information to help developers undertake site appraisals and research.

Search engine for planning policy information across the UK.

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# Urban Intelligence Open Public Data

Planning policy documents

Currently National Planning Policy Framework (NPPF), Planning Practice Guidance, the London Plan and key development plan documents from the 33 boroughs of Greater London.

Urban Intelligence gathers those documents in one place and makes them searchable.

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# Urban Intelligence Non Open Public Data

Plans to extend with non open data

Enough open public data for the time being.

Plans to extend to non open data, such as Ordnance Survey mapping or Land Registry data.

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# Urban Intelligence Value Added

Searchable nationwide planning  
policy documentation

Each local authority produces its own  
planning policy.

Urban Intelligence provides a holistic view  
by making them searchable in a single  
application.

Easier for developers to spot risks and  
opportunities and for the public sector to  
make wider policy and investment decisions.

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# Urban Intelligence Business Model

'Howard', is a search engine of planning policy

Search engine of planning policy in a beta, currently being used by a select number of professionals within a range of environments which include large planning consultancies.

Developed via several grants and accelerator programs.

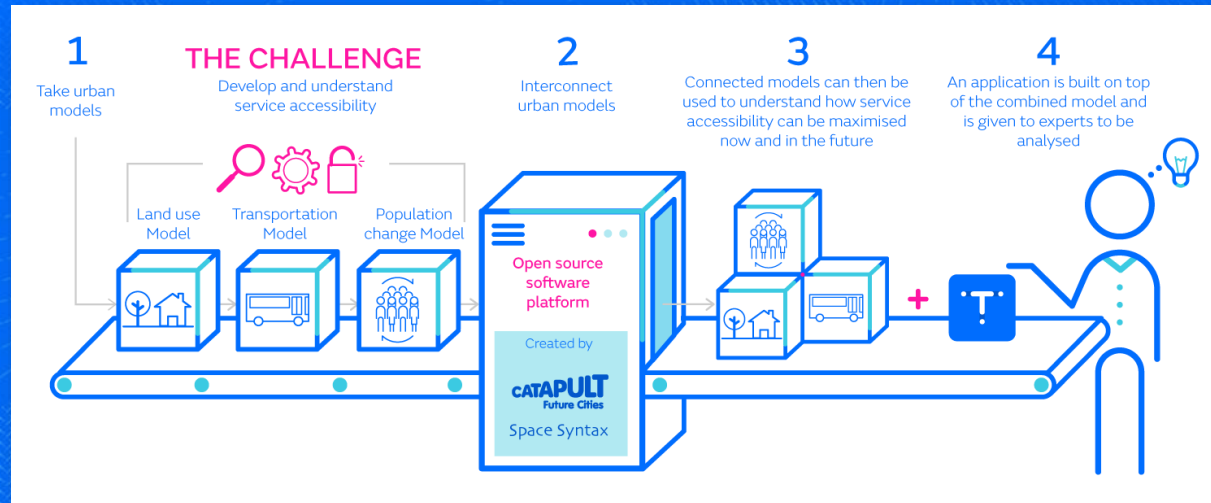
Refining business model and funding.



# Tombolo

A government funded project for building software tool for interconnecting soft and hard urban systems

<http://tombolo.org.uk/>



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# Tombolo About

Government funded research  
project

Integrated Urban Models

Tombolo is a 3 year research project funded by  
Innovate UK

We are in 2<sup>nd</sup> quarter of year 2

Partners are Future Cities Catapult and Space  
Syntax

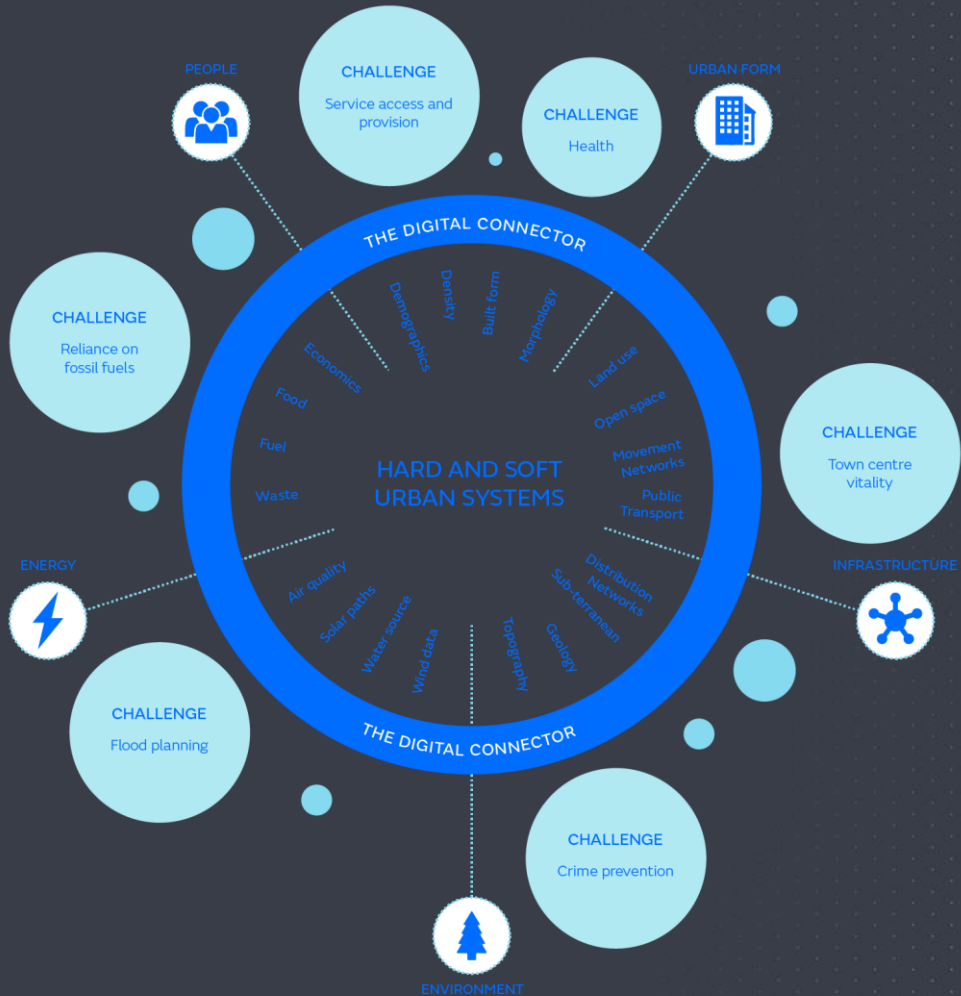
Collaborating with local councils

Developing software to integrated urban modeling

Clear route to market is a final deliverable

# Tombolo Objective

To build a software tool -- **Digital Connector** -- for connecting **hard** and **soft** urban systems in order to address a range of **city challenges**



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# Tombolo Open Public Data

Importers for key national data providers

We support importing data from

- Office of National Statistics
- London Datastore
- Department for Transport
- National Health Service
- Transport for London
- and counting ...

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# Tombolo

## Non Open Public Data

Importers for key partners

Custom importers

We support importing of

- Space Syntax spatial networks
- TransportAPI

Flexible language allowing users to implement custom importers for the any additional data they need.

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# Tombolo Value Added

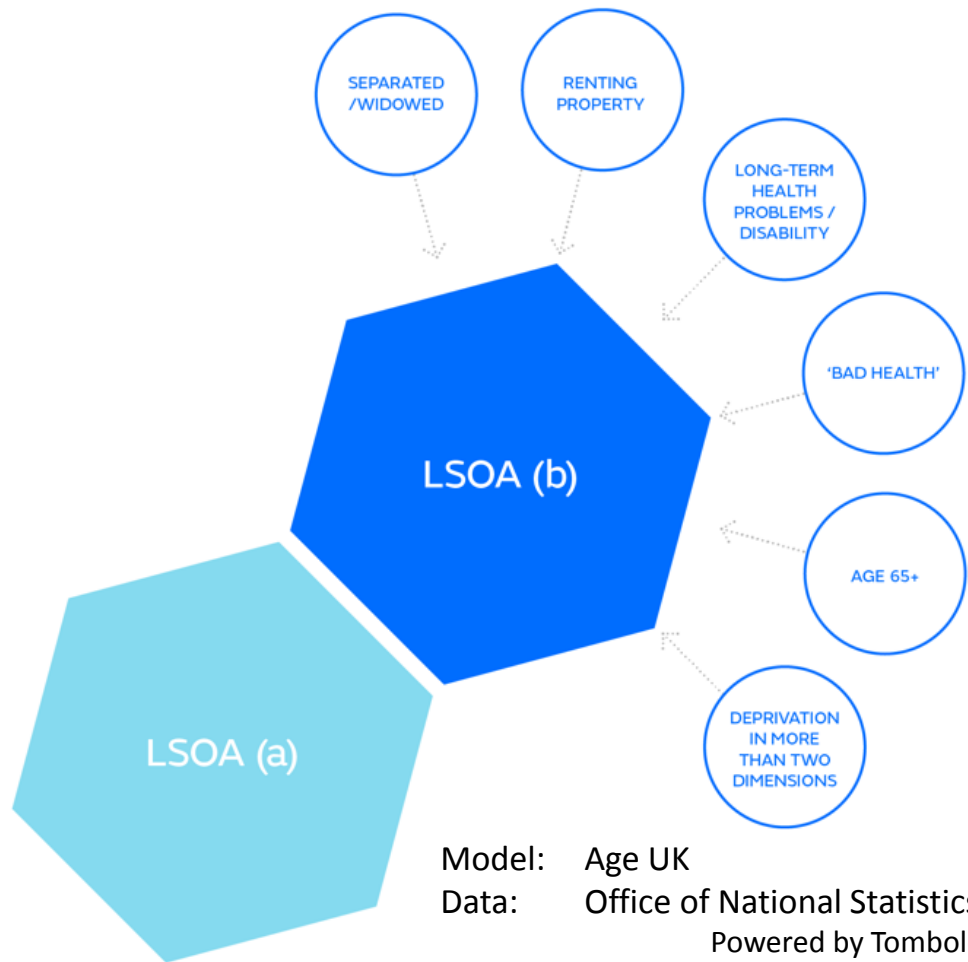
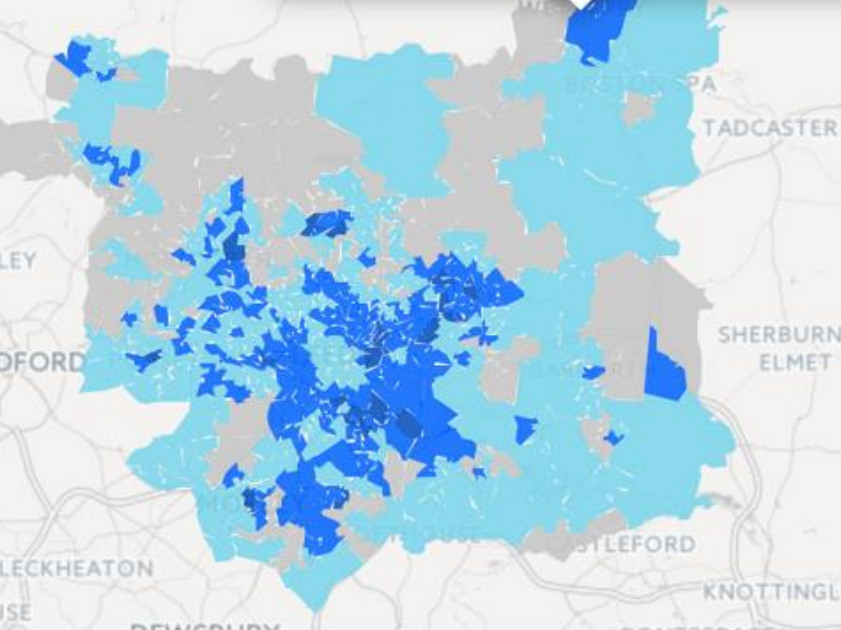
Combining datasets

Supports the combination of open/closed public/private datasets

Modelling with data

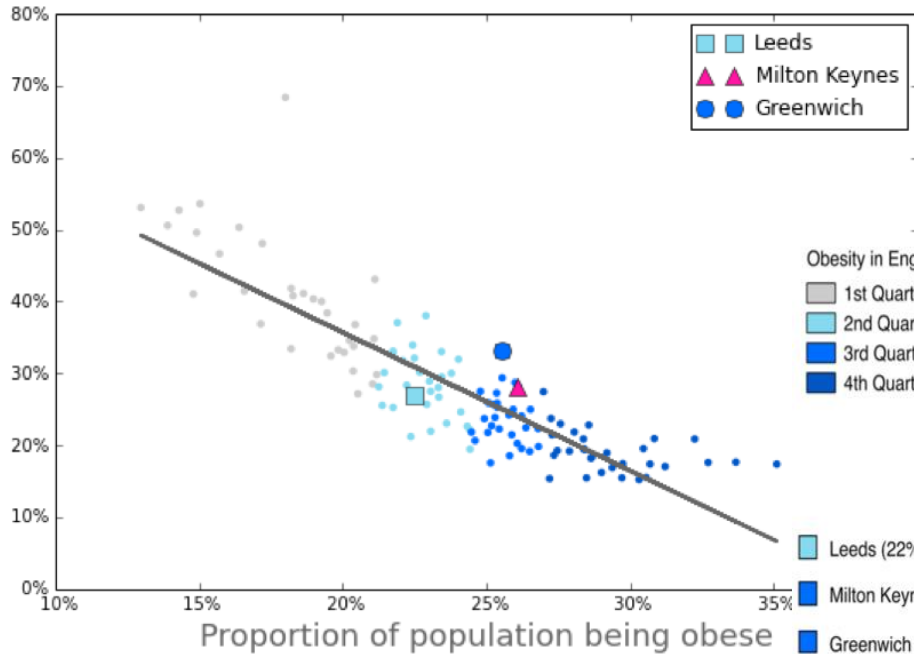
Supports building advanced statistical models on top of open/closed public/private data

Facilitates experimentation with integrated urban models

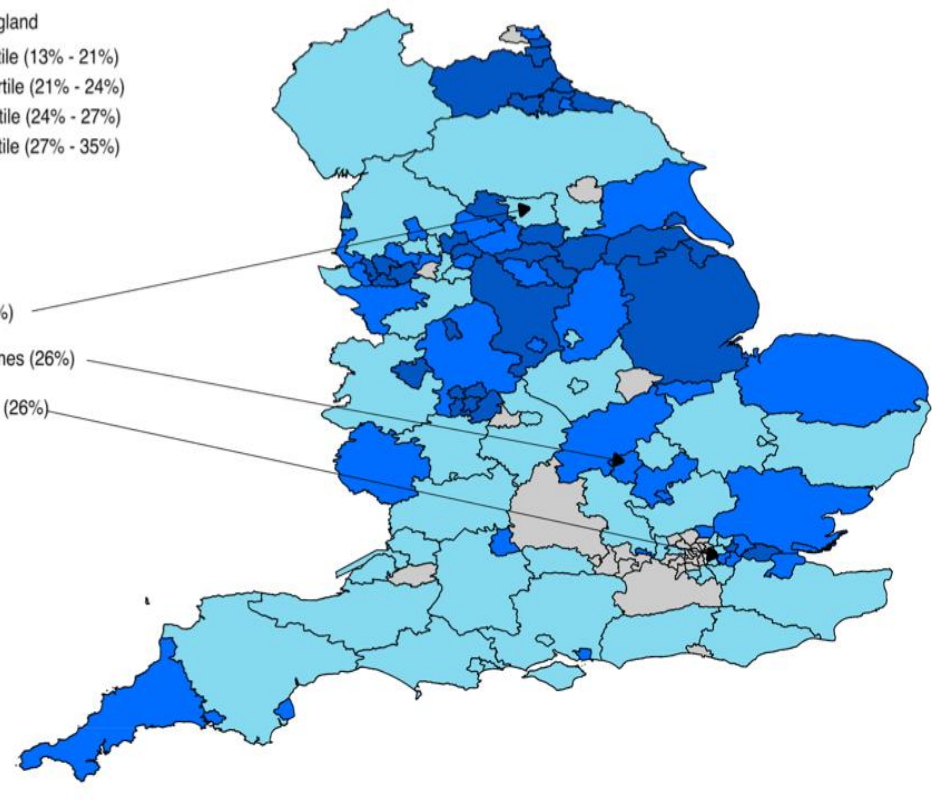


Tombolo  
Modelling elderly  
social isolation

Proportion of people with high qualification

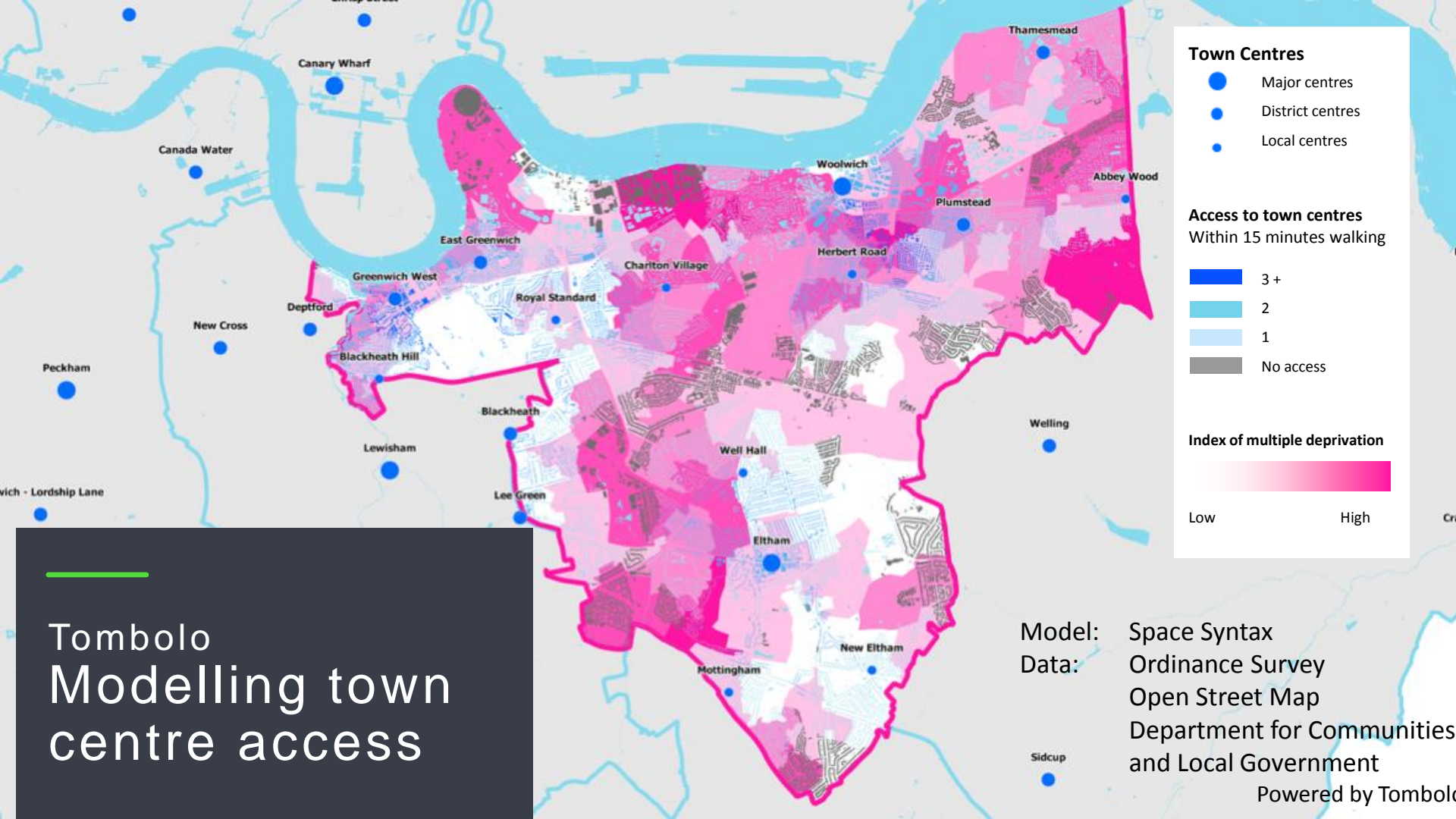


Data: Office of National Statistics  
Public Health England  
Powered by Tomolo



Tomolo  
Understanding  
obesity in  
England





**Tombolo**  
**Modelling town**  
**centre access**

Model: Space Syntax  
 Data: Ordnance Survey  
 Open Street Map  
 Department for Communities  
 and Local Government  
 Powered by Tombolo

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# Tombolo Business Model

Work in progress

Open source

Consultancy

Freemium

Training

We are in the progress of defining our business model

Core of the Digital Connector will be released as open source

Potential revenue streams include

- Consultancy
- Freemium
- Training

A photograph of a busy city street, likely in Lisbon, Portugal, featuring a yellow tram and several cars. The street is lined with historic buildings and has tram tracks. A dark blue circular graphic is overlaid in the center, containing white text. The text is arranged in a vertical sequence: '3 Companies' at the top, '1 Research project' below it, an equals sign, and 'Varied business models for open public data' at the bottom. Two short blue horizontal lines are positioned above and below the text block. The background image is semi-transparent, showing pedestrians on the sidewalk and a tram with 'PRAZERES 28' on its destination sign.

**3 Companies**  
**1 Research project**  
**=**  
**Varied business models for open public data**

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# Thank you

[www.futurecities.catapult.org.uk](http://www.futurecities.catapult.org.uk)

@futurecitiescat

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