



University College London
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Session 4: New Media and the Smart City: Networks Again, Virtual Cities, & Crowdsourcing

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<http://www.spatialcomplexity.info/>

July 7, 2018



Let me begin with a short video that makes the point that the visual dimension is all important in thinking how we can automate the city.

In this lecture we will introduce a lot of digital media which on one sense is simply digital versions of the city that we see in the most superficial sense.

We face the prospect that not only can we acquire new and big data through information technology this data can be used to construct media that in turn is used to enable the collection of data in the first place. You will see what I mean as we continue.

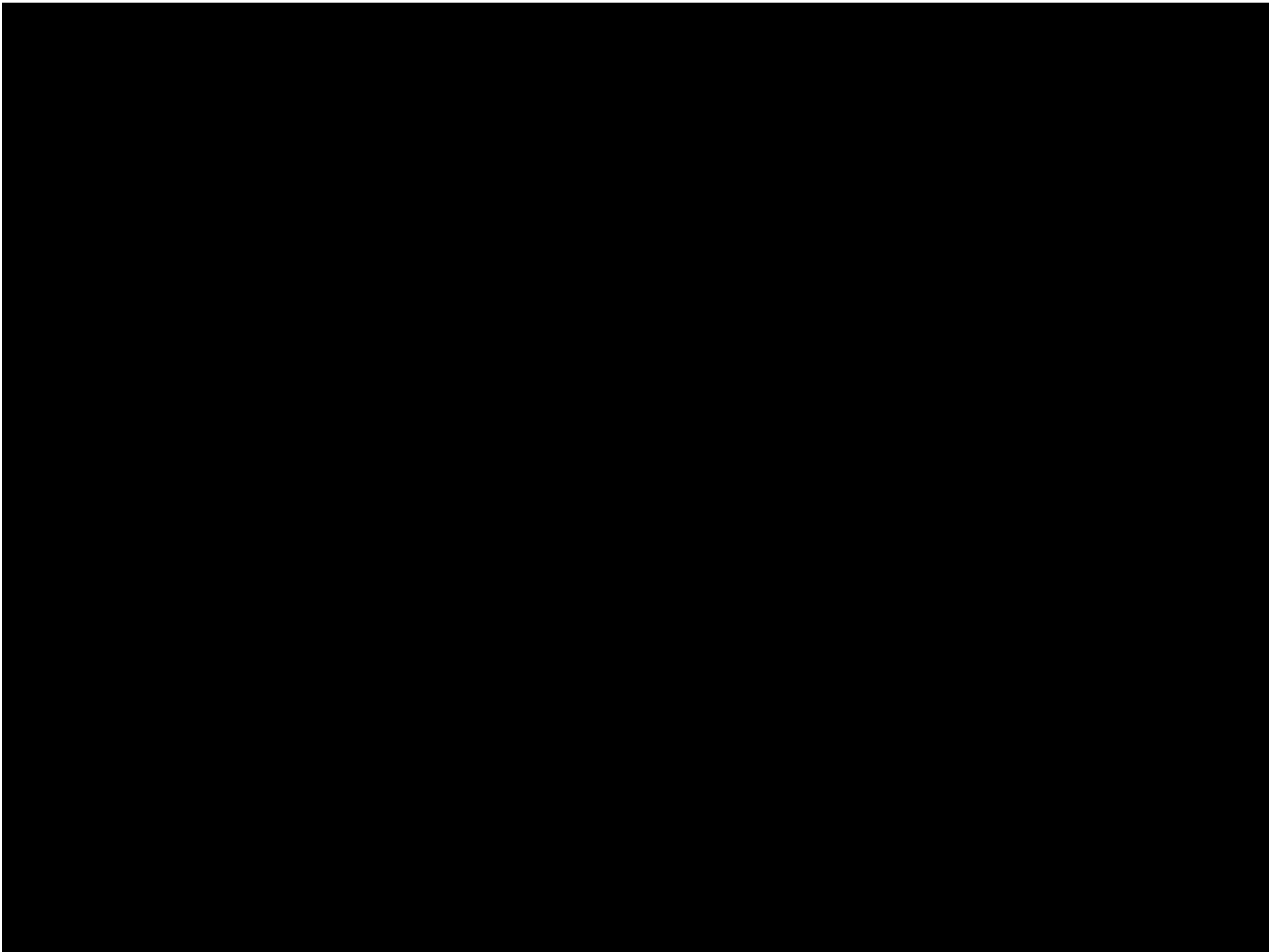
But first the movie:



China-Britain

Joint Science and Technology Summit

中英科技合作峰会



Outline

- A Little Bit More on Networks and on Flows – Public Transport, Bikes, and Tweets
- The Construction of Virtual Cities
- Alternative Virtual Media
- Traditional Media Informed by Computation: Analogies
- More on Dashboards, Portals and Gateways to the Digital World
- Crowdsourcing: The Power of the Web
- Things We Haven't Discussed: The Delivery of Services Using Web- Based Technologies: New Disruptive Technologies such as Uber, Autonomous Vehicles



Animations of Public Bike Movements



Animations of Changes in the Bike Nodes; Docking

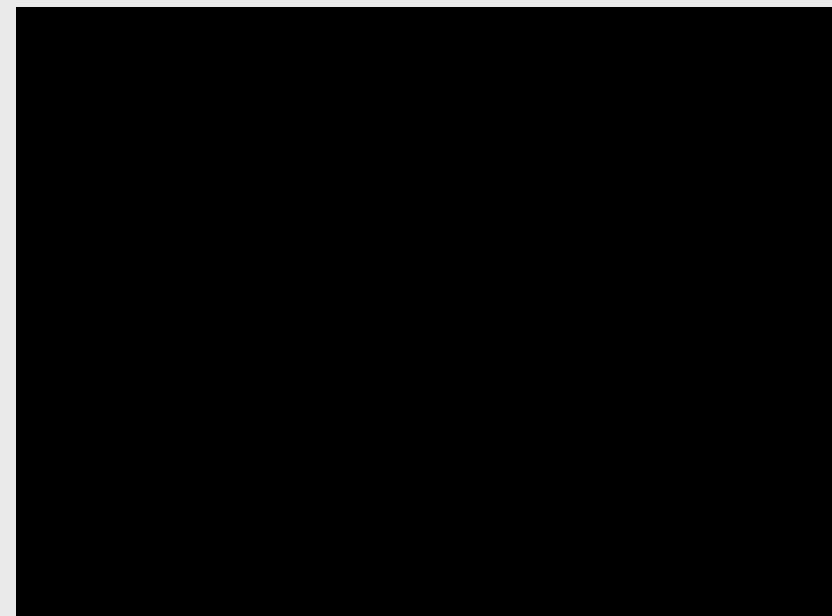
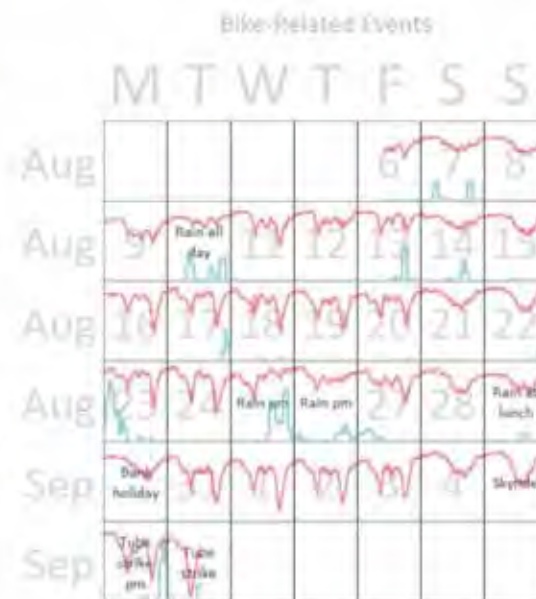
Bike-o-Meter
casa.ucl.ac.uk/bom

- Tweet-o-Meter for bikes
 - Steven Gray (@trogg)
 - Using Google Gauges
- See the real life Tweet-o-Meters at the new British Library "Growing Knowledge" exhibition
 - Should be easy to hack to show the Bike-o-Meters instead ☺



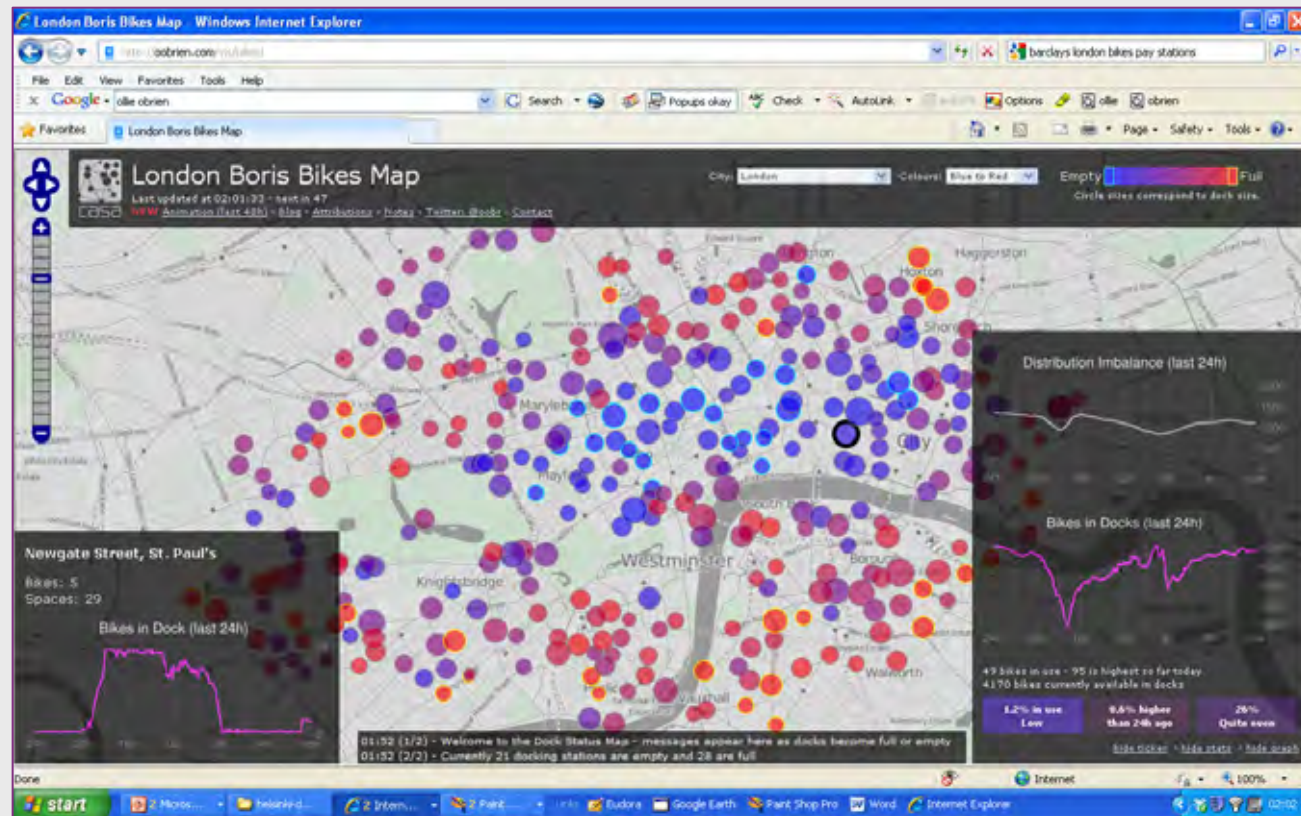
More Analysis

- **London**
- Graph shows number of bikes available to hire
- Effect of rain
 - Using the CASA weather station
- Effect of the tube strikes



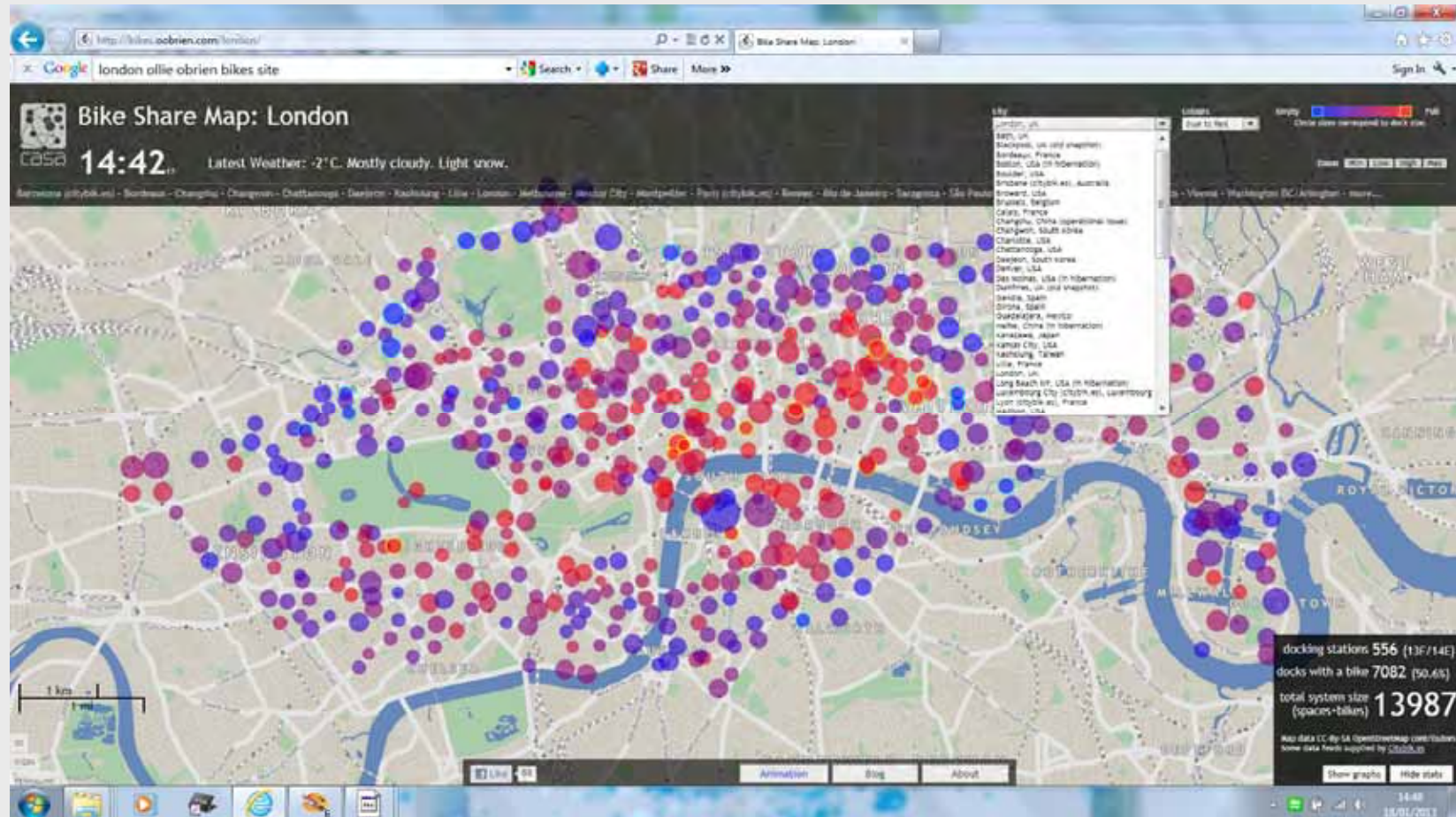
Related Real-Time Data: Bikes, Social Media

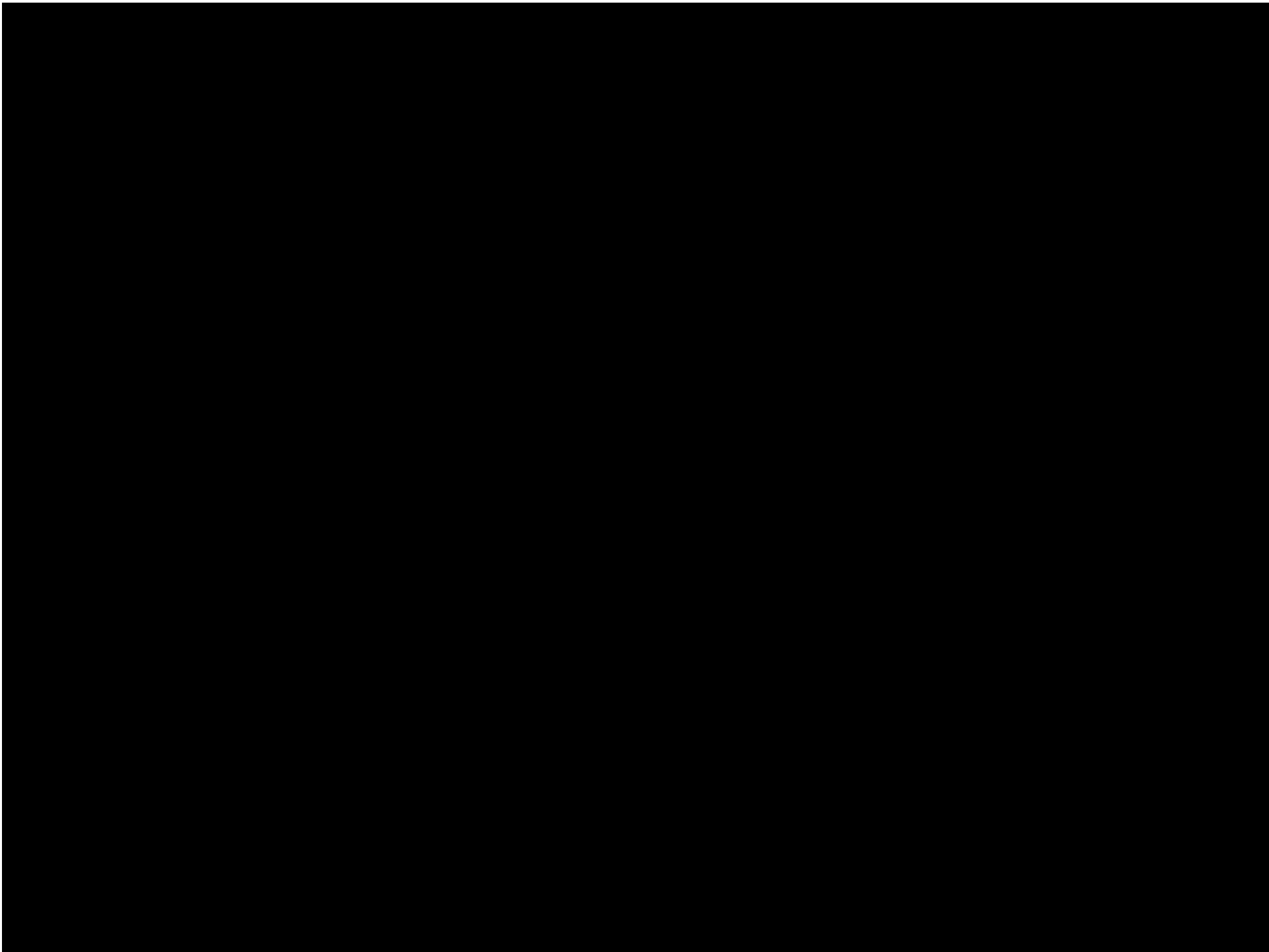
A lot of data is now coming online for travel and one of our group Oliver O'Brien has some 97 bike schemes world wide for which he has online data in real time - Bikes Data – 4200 bikes, started Nov 2010, all the data- everything – all trips, all times, all stations/docks



The Website: Real Time Visualisation of Origins and Destinations Activity

<http://bikes.oobrien.com/london/>

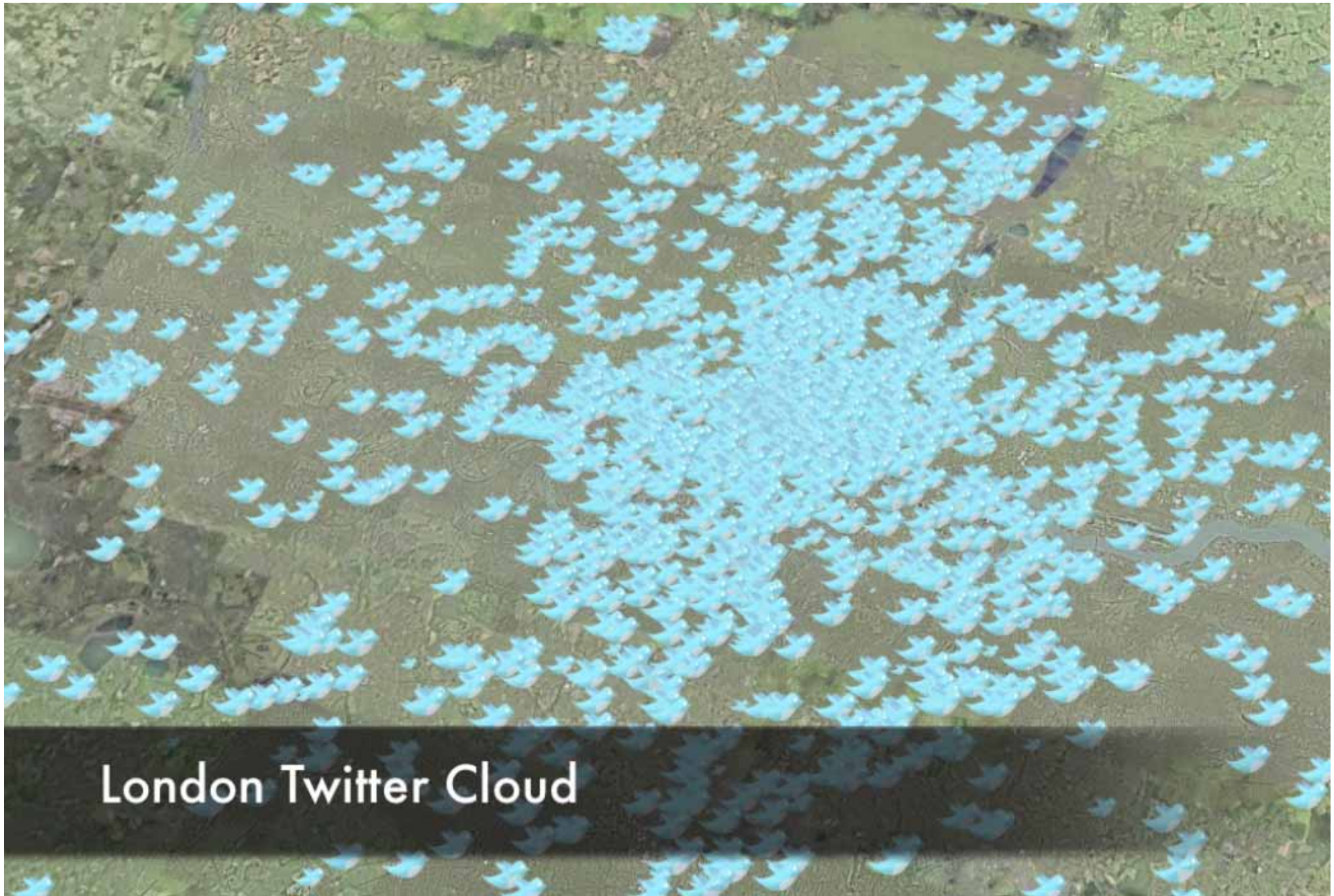




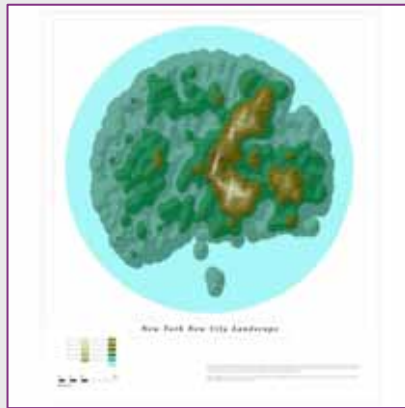
Extracting and Mapping Social Media

We have started to mine, map, interpret much social media because of the ease of its availability – and we have started looking at Short Text Messaging – Twitter data. We have also begun to look at phone tracking data – from the iPhone for example but many of our data sets such as the bikes data, the Oyster card and such like data are really part of the same domain of new bottom up data. We have no control over this but some of the social media data we are mining we have greater control over. Here are some examples.

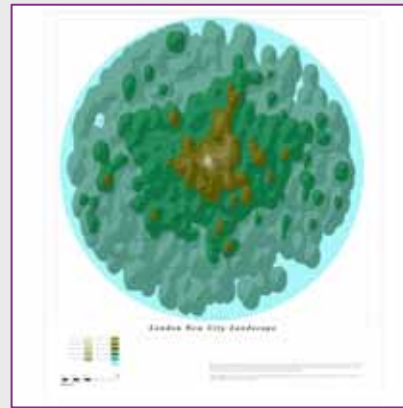
And Here is a Map of Tweets above London which uses Google maps to visualise these data



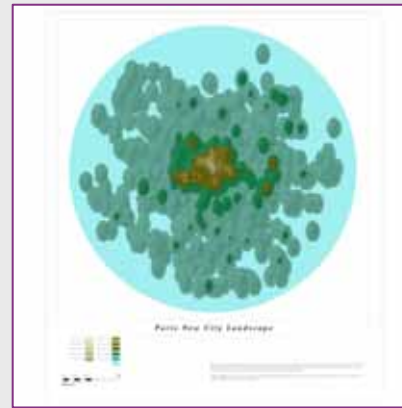
London Twitter Cloud



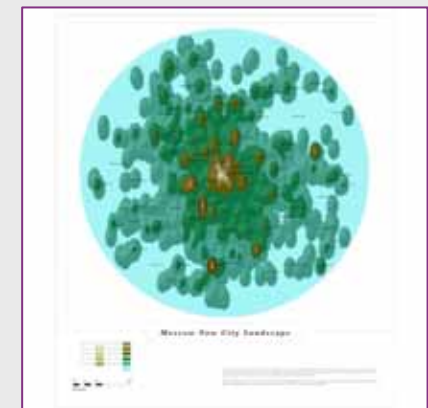
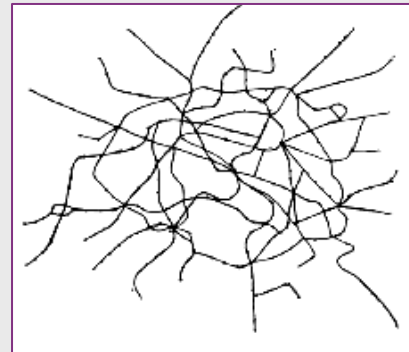
New York



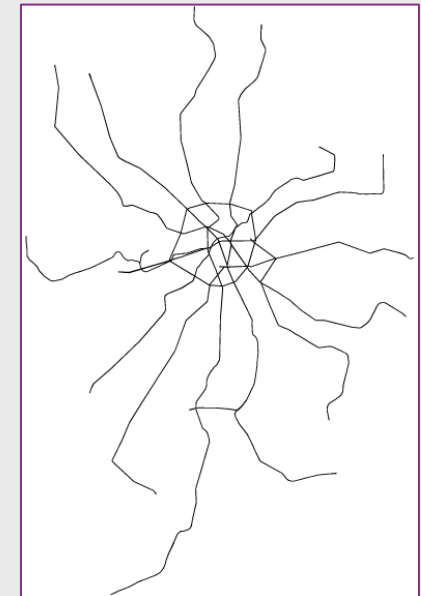
London



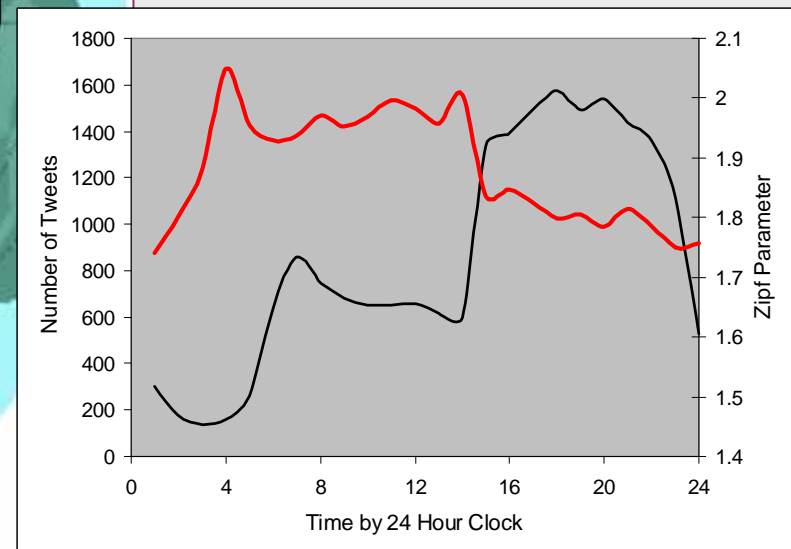
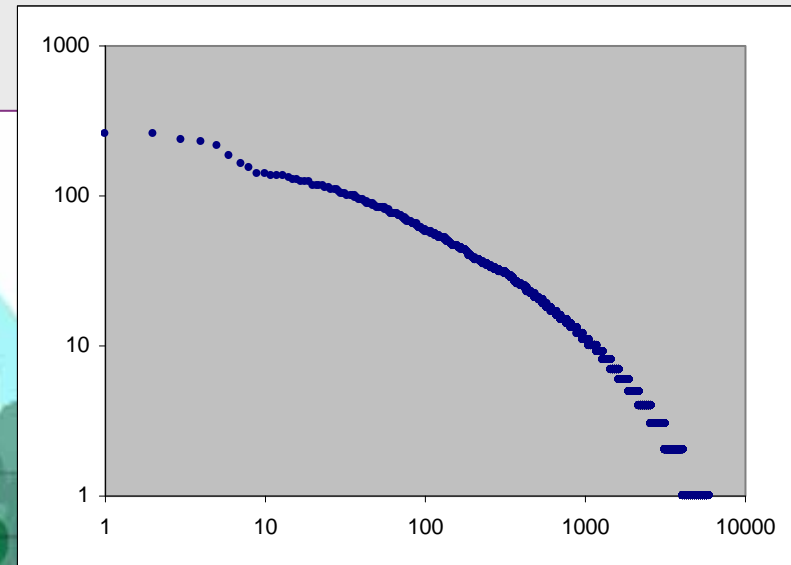
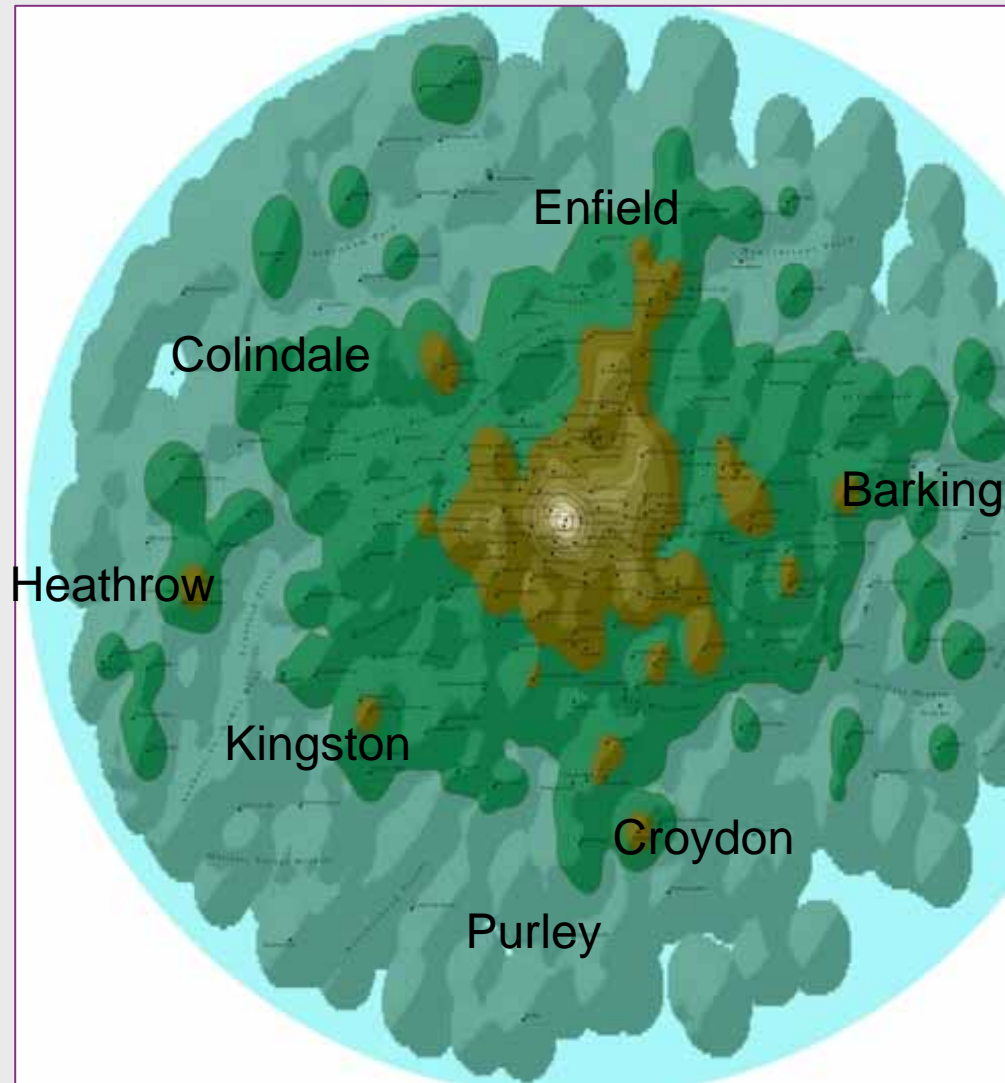
Paris

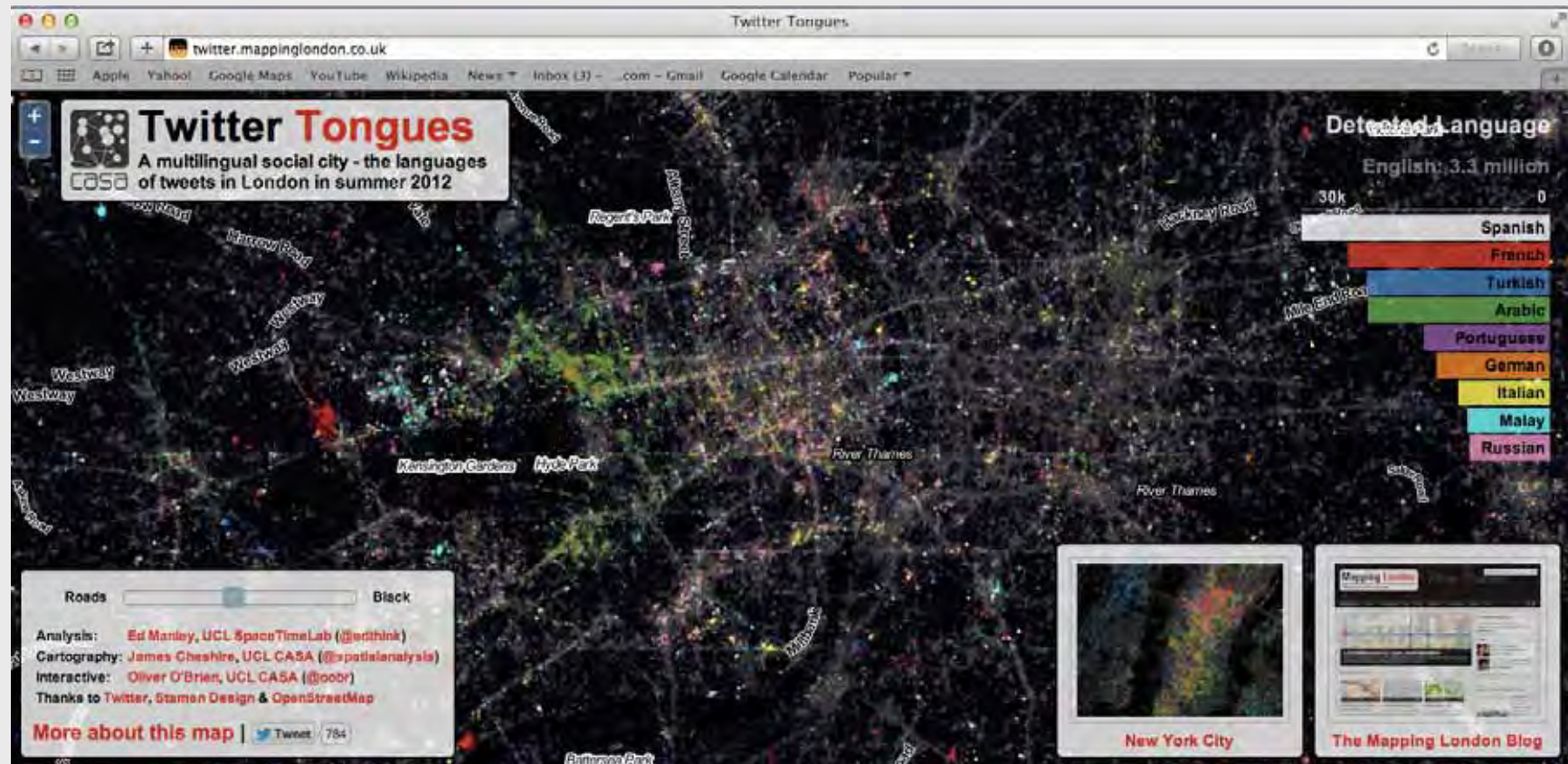


Moscow



London

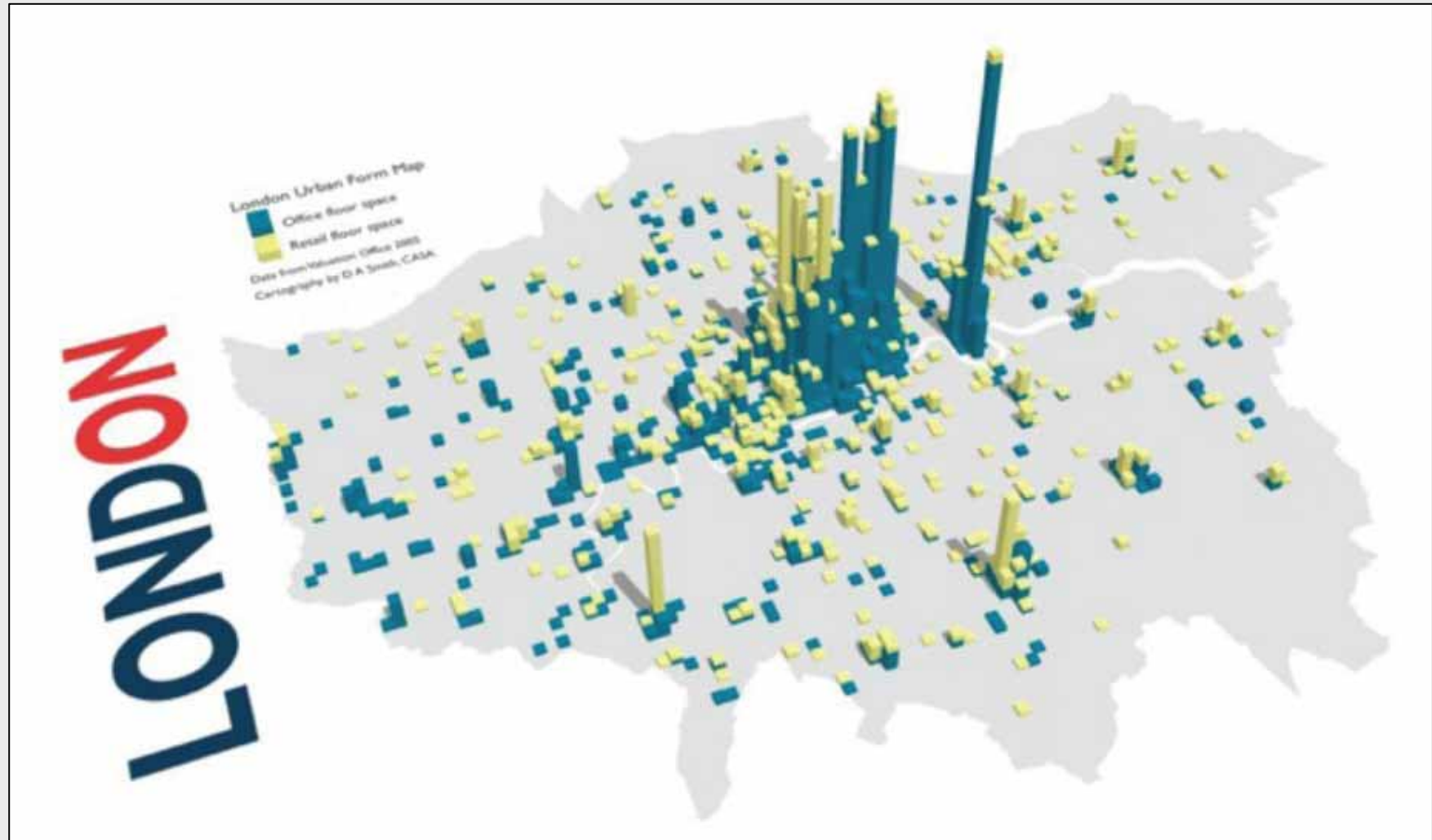




Returning to our old exemplars – these are being enriched with new tools and new data and new animations

Our LUTI models are being informed by 3-d visualisation and can now be imported into 3-D in working form

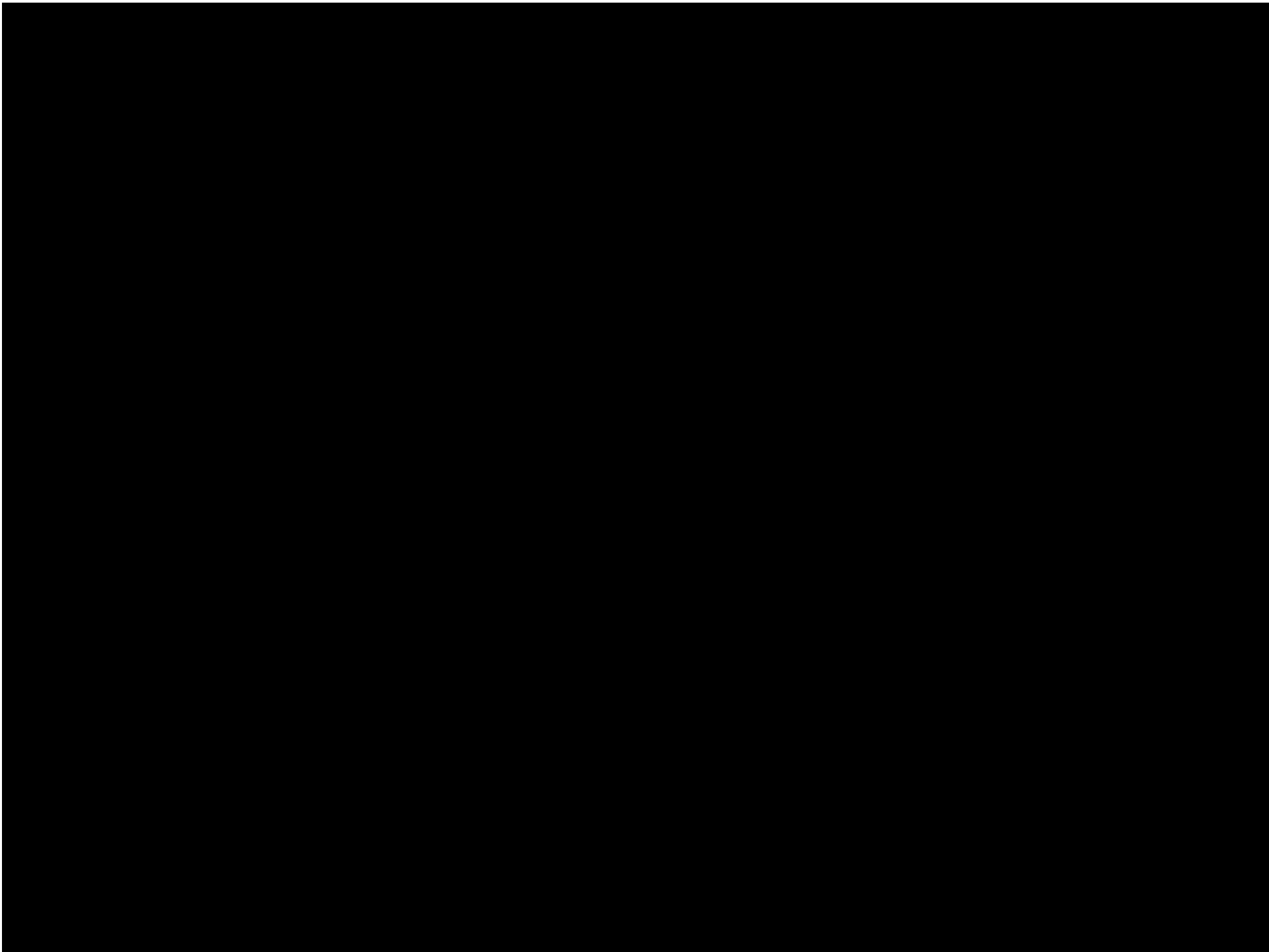
Our 3-d visualisations are being enriched with new and rapid sensing technologies using everything from phones to drones and new data attributes in terms of social media.











My second set of example: how do we model the city iconically, visually. How do we use 3D technologies to make sense of the traditional city which is fast becoming the smart city

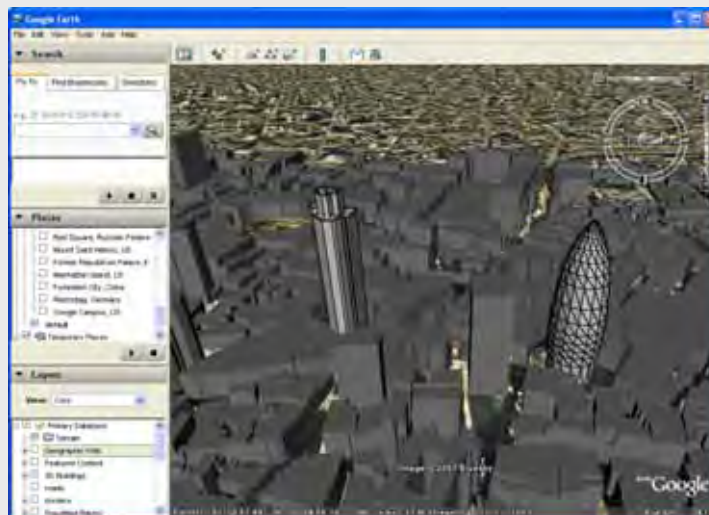
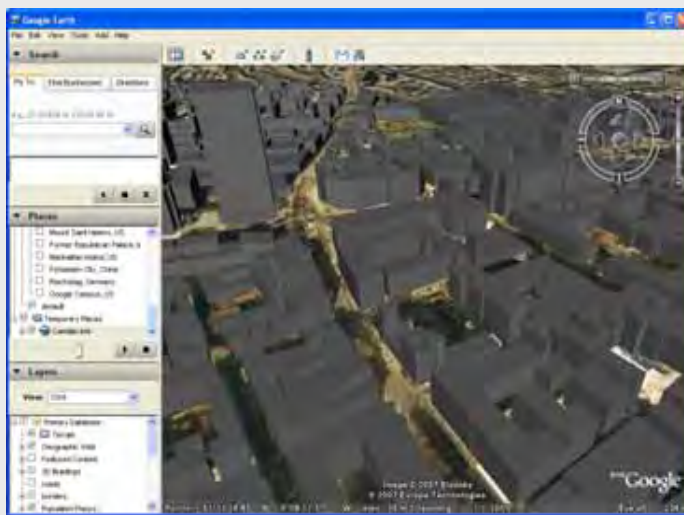
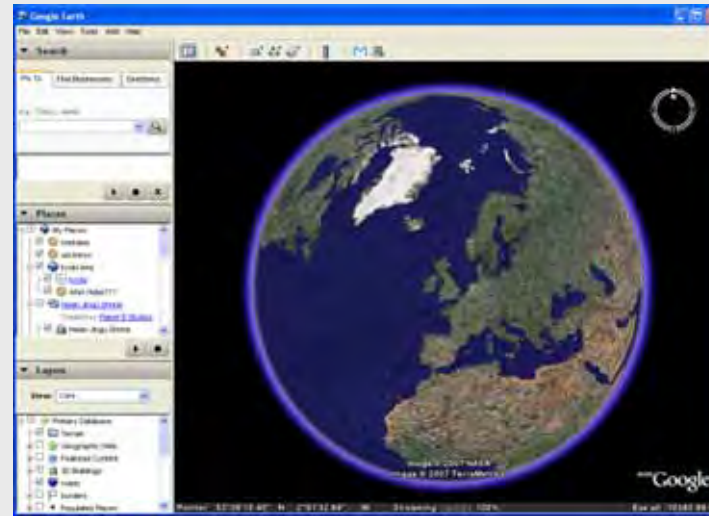
Fifty years ago iconic models were barely conceived as very being digital but our Virtual London model is now a routine digital 'architects' model of the physical form of the city.

It is built in 3D-GIS, ArcGIS, ported in and out of CAD and Games software, into Google Earth, Second Life, and so on.

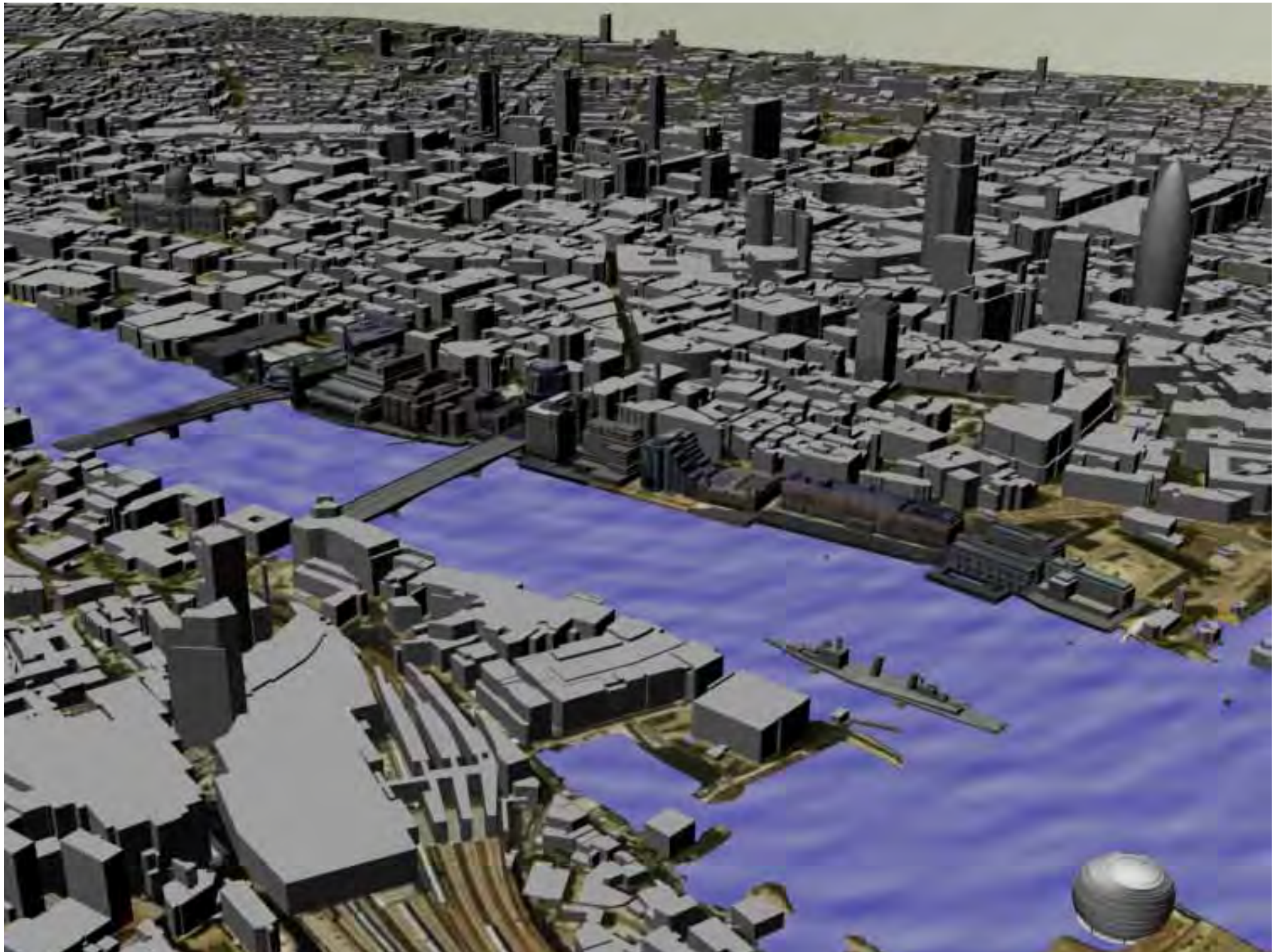
We use it as our test bed for multimedia. This is linked to much of our representational and multimedia work that I will tell you about later.

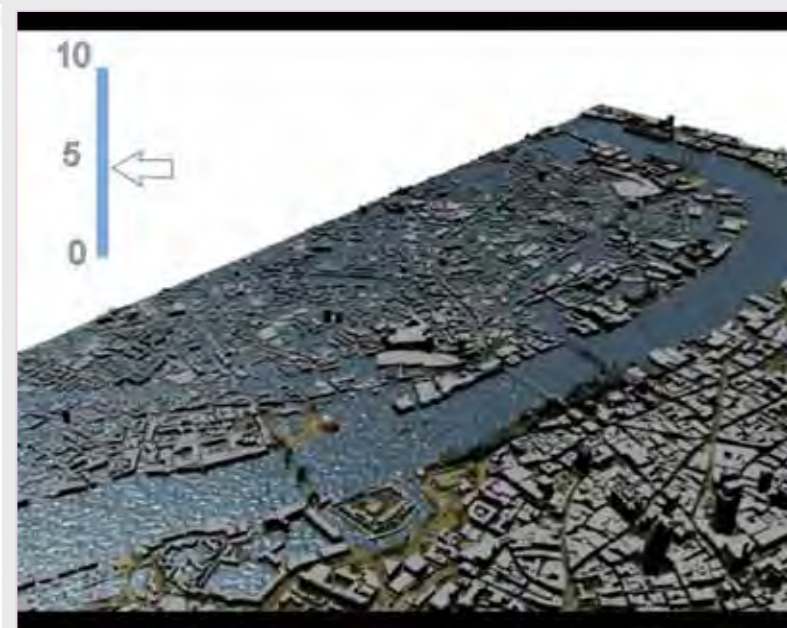
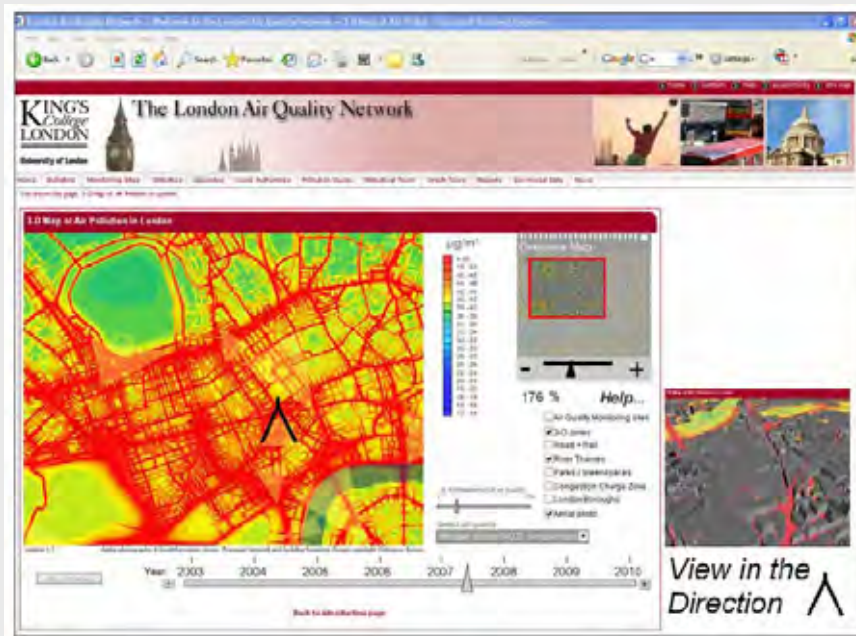
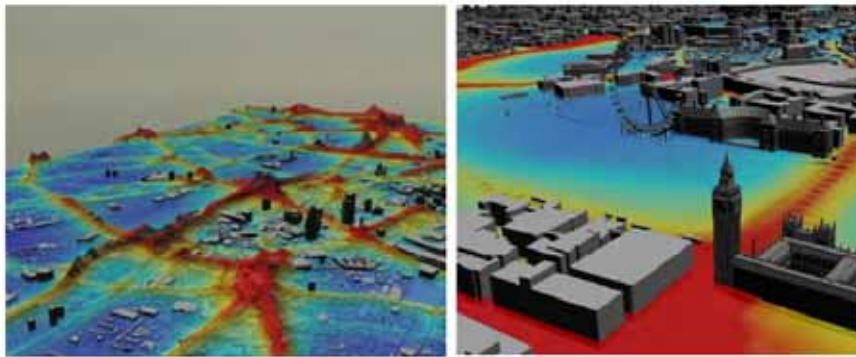


2D to 3D: GIS to CAD and back and on the web

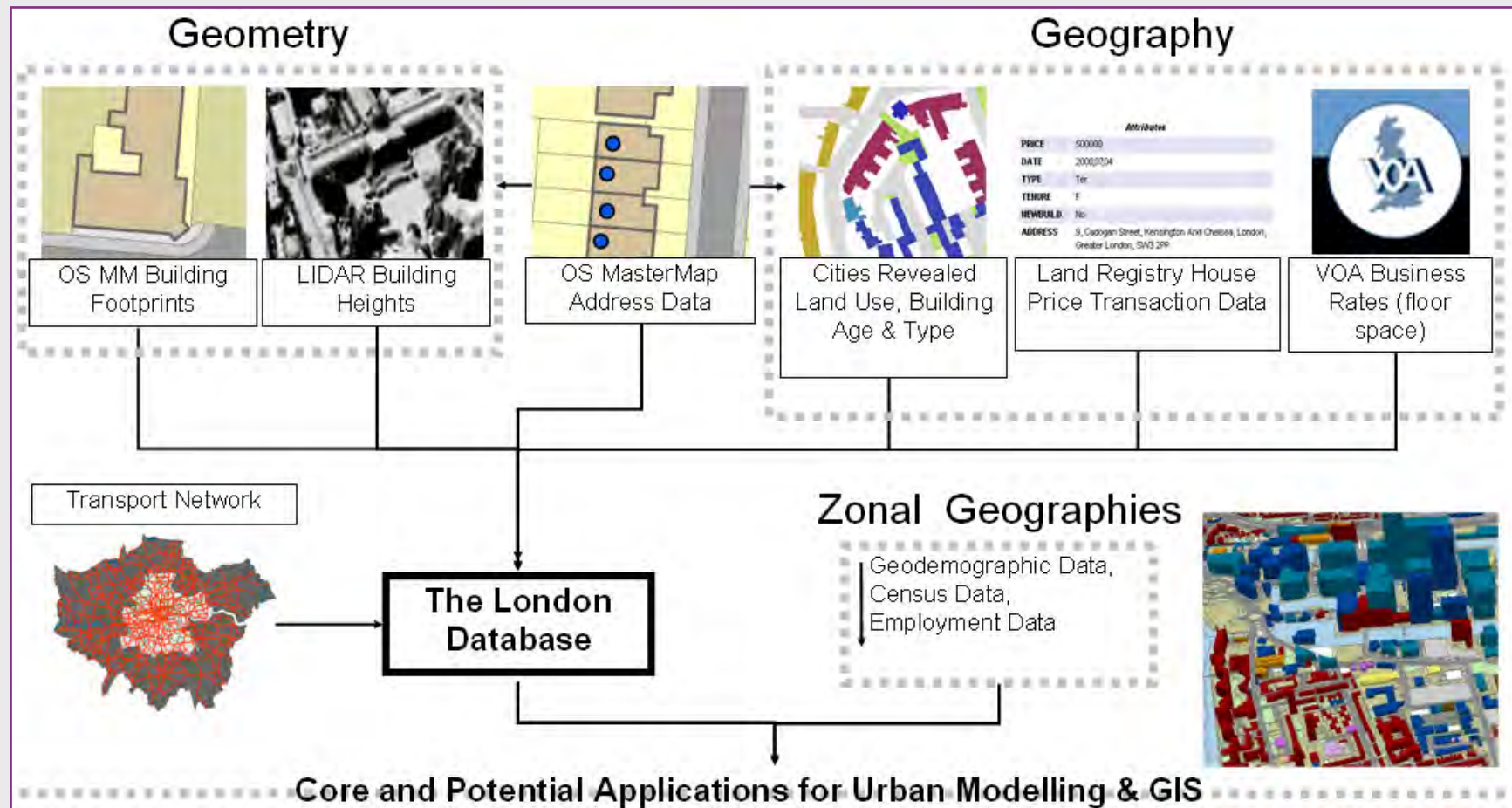


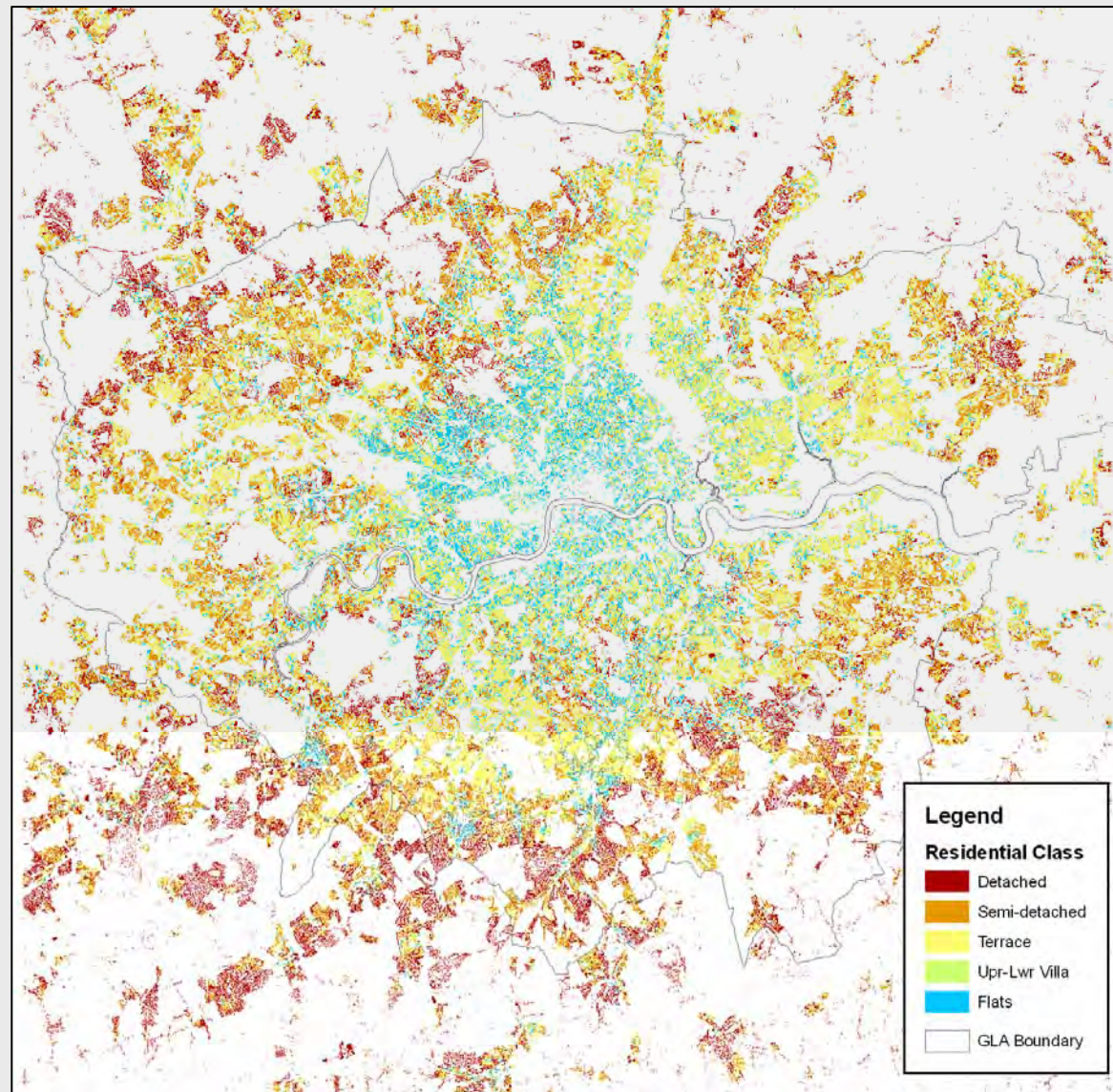
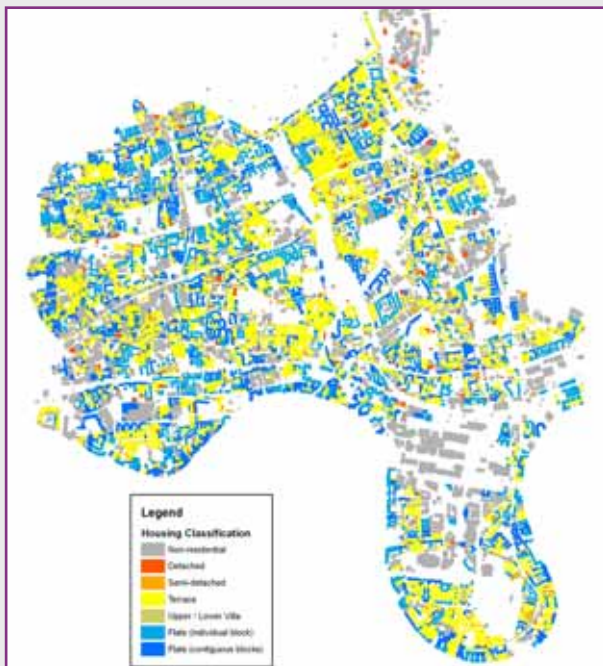


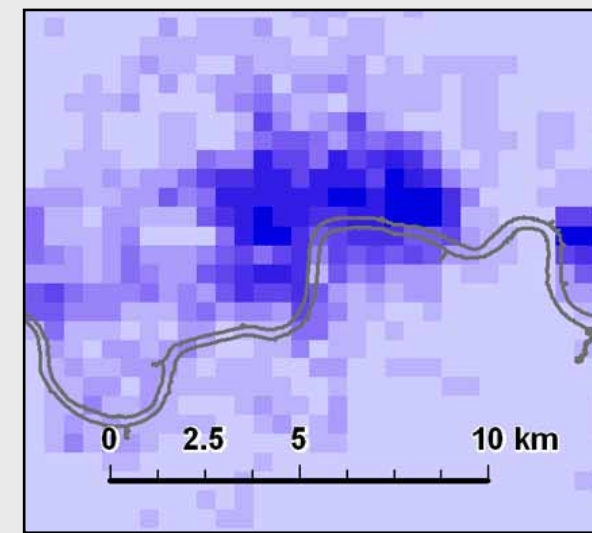
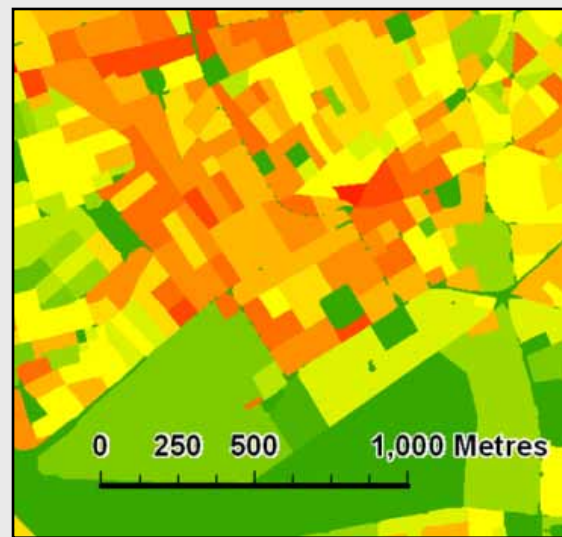
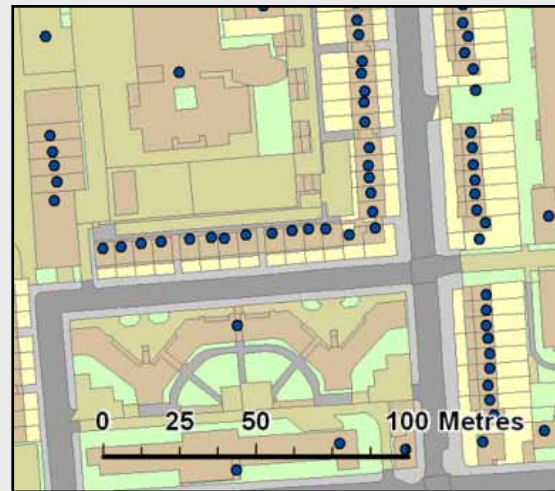




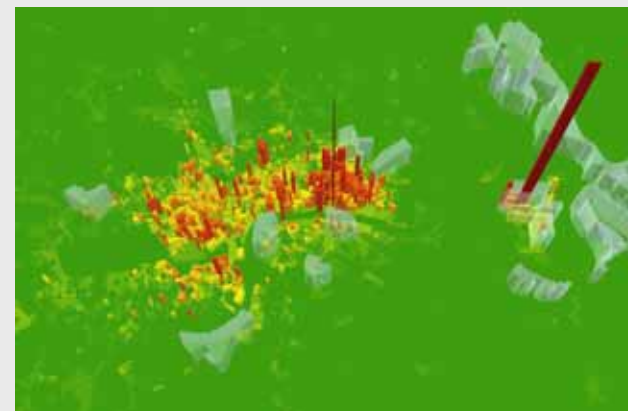
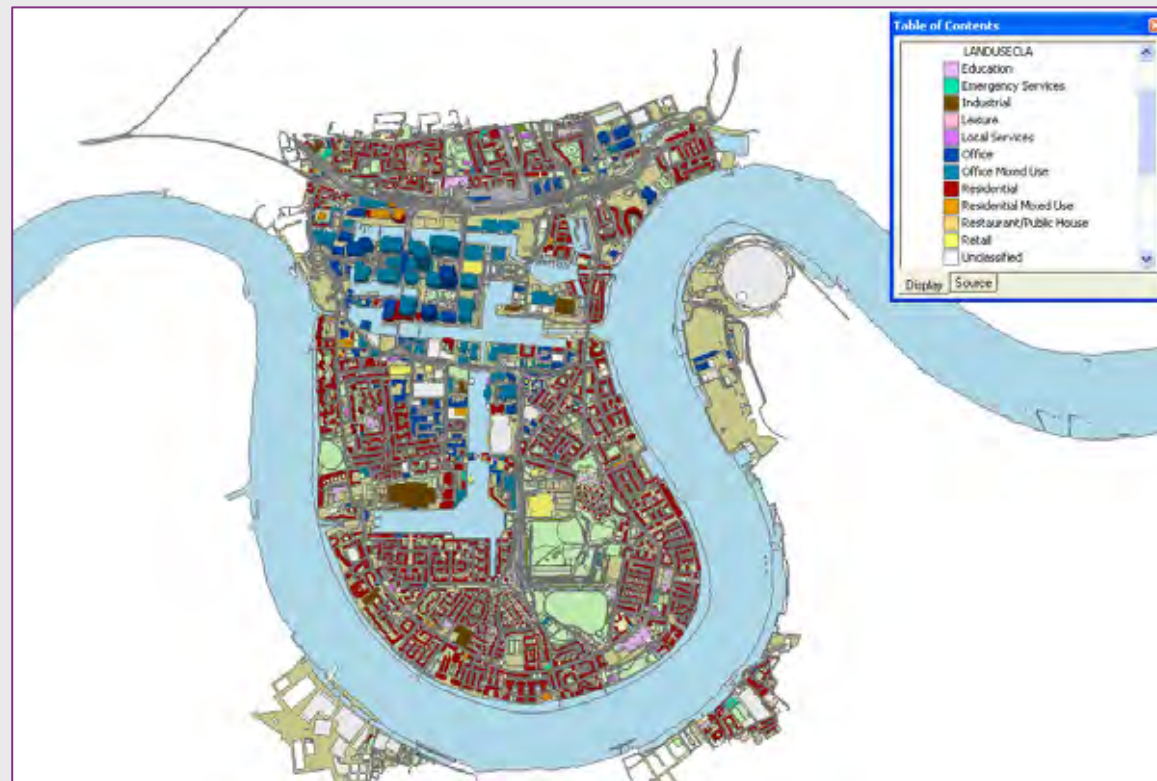
From geometry to geography and back – populating really large spatial data bases and using the model as a visualisation tool for analytic purposes

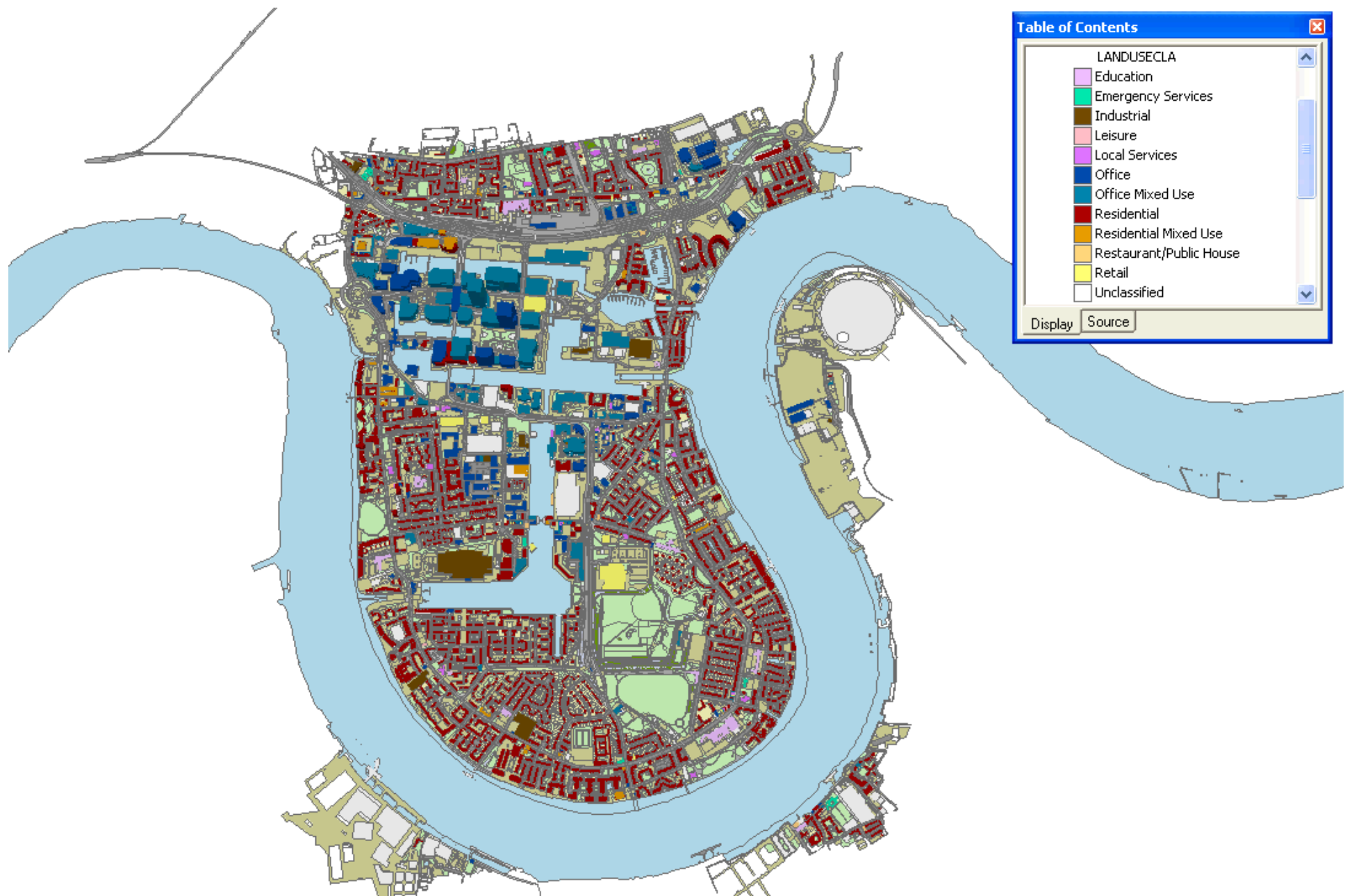






Adding Land Use, Transport and Populations and Aggregating Scales





Moving it into related media

Into games engines, virtual worlds, and into back into the material world by printing the model e.g.



index.gif - Microsoft Internet Explorer


File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media


Address http://www.casa.ucl.ac.uk/atmos/ Go Links

Google Search Web 86 blocked AutoFill Options



LONDON



Use your arrow keys or mouse to move in the Virtual World.



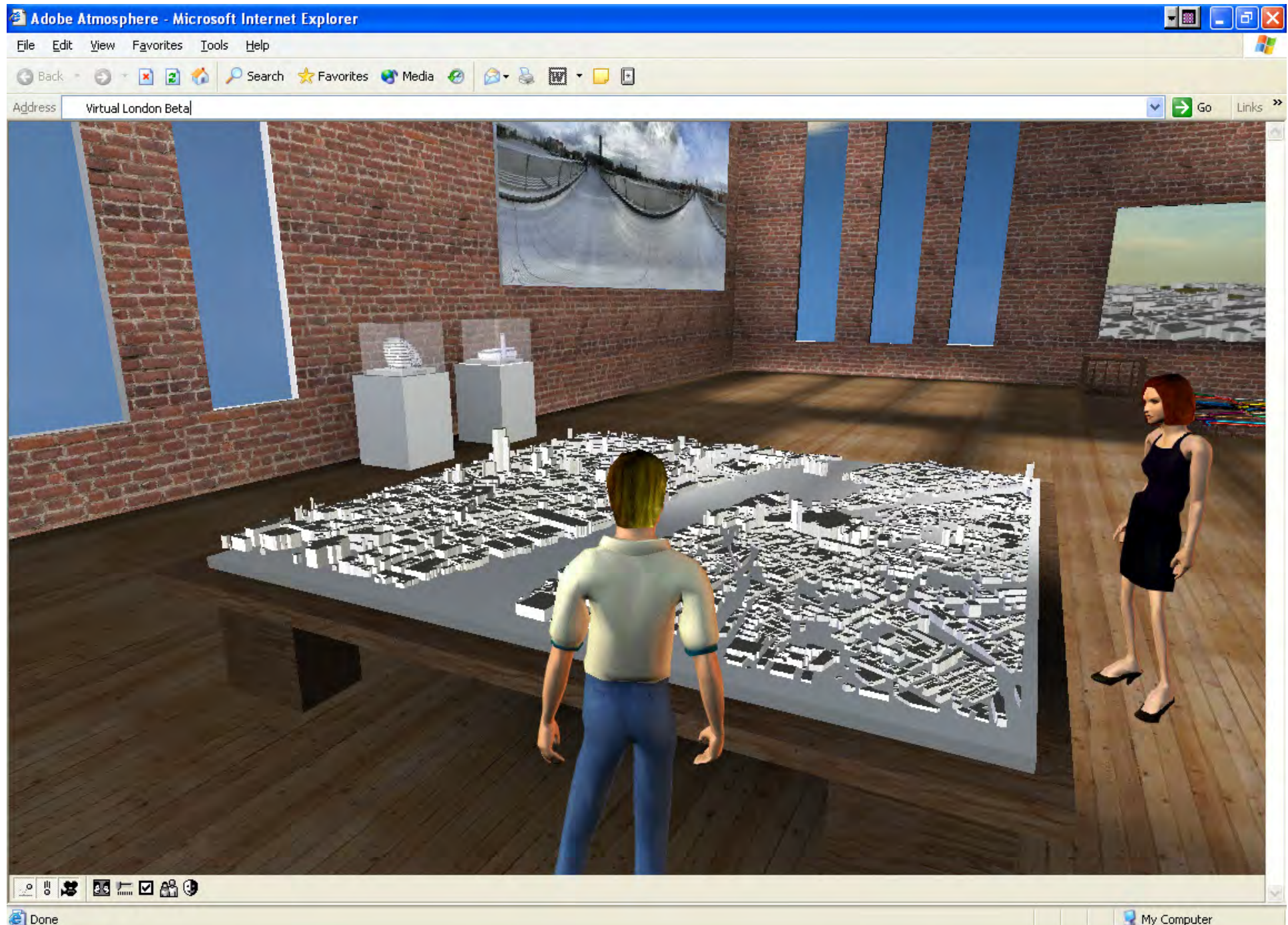
To tilt your view, hold down the Ctrl key, and use the arrow keys or mouse.

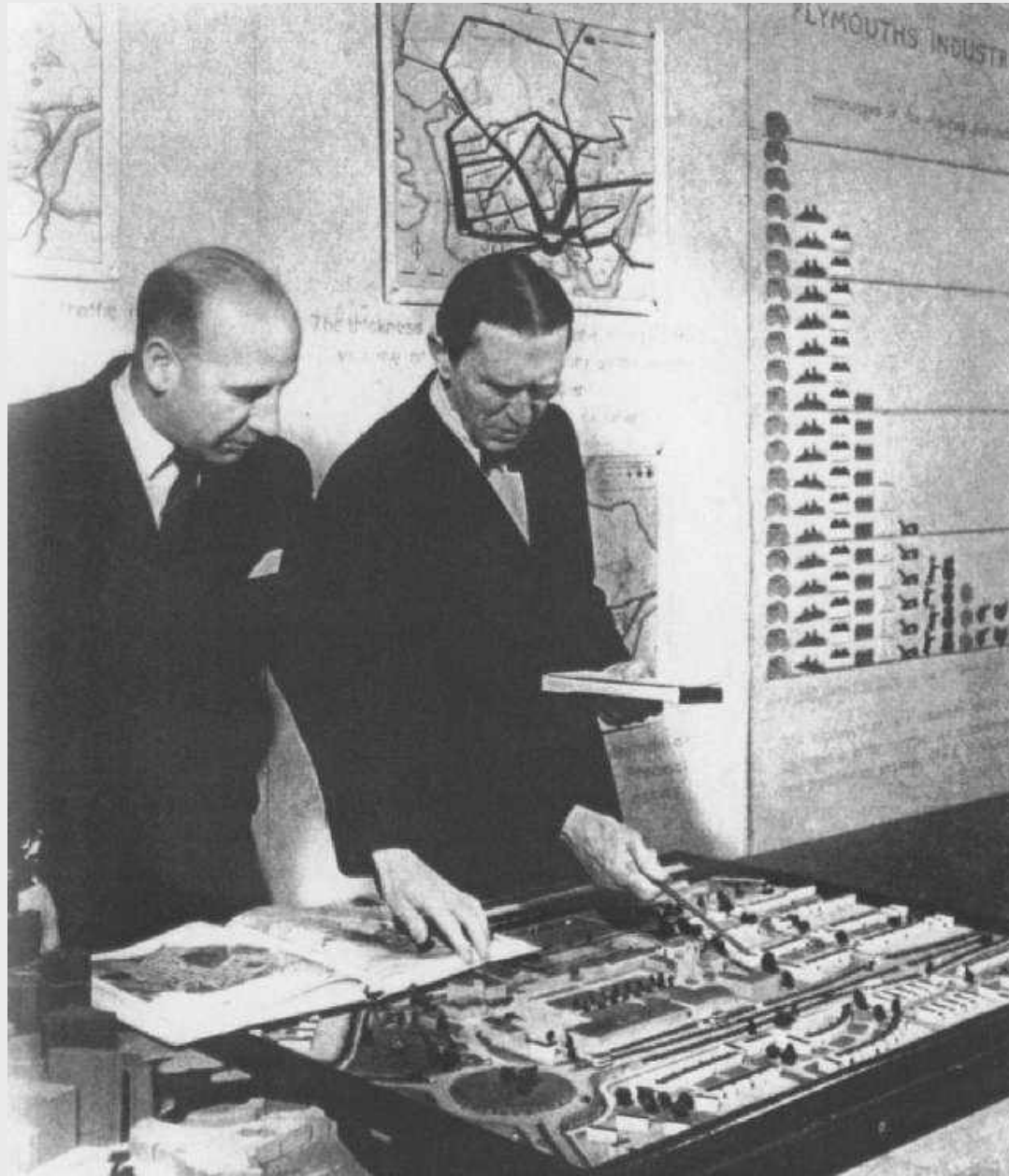



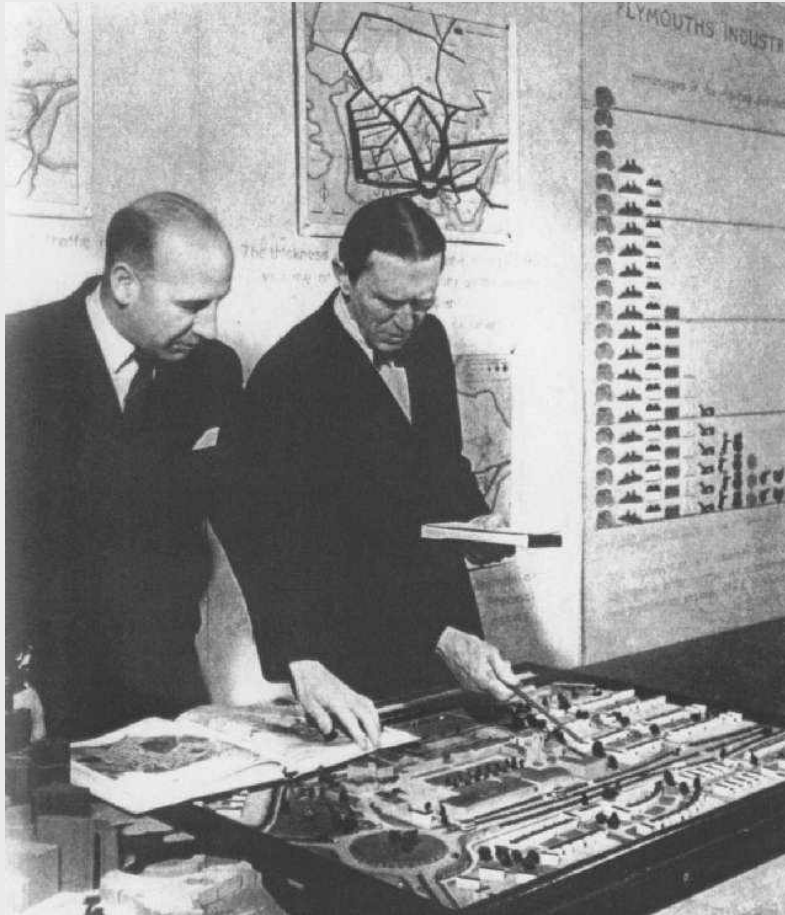
Welcome to the Virtual London 'multi-user' gallery. If its your first visit the software will automatically install on your machine. Its simple to use and provides and insight into the development of Virtual London at the Greater London Authority.

Virtual London was developed at the Centre for Advanced Spatial Analysis, University College London. Please contact asmith@geog.ucl.ac.uk for help or further information.

We can show a movie of this







*How did we get
from here to
there?*

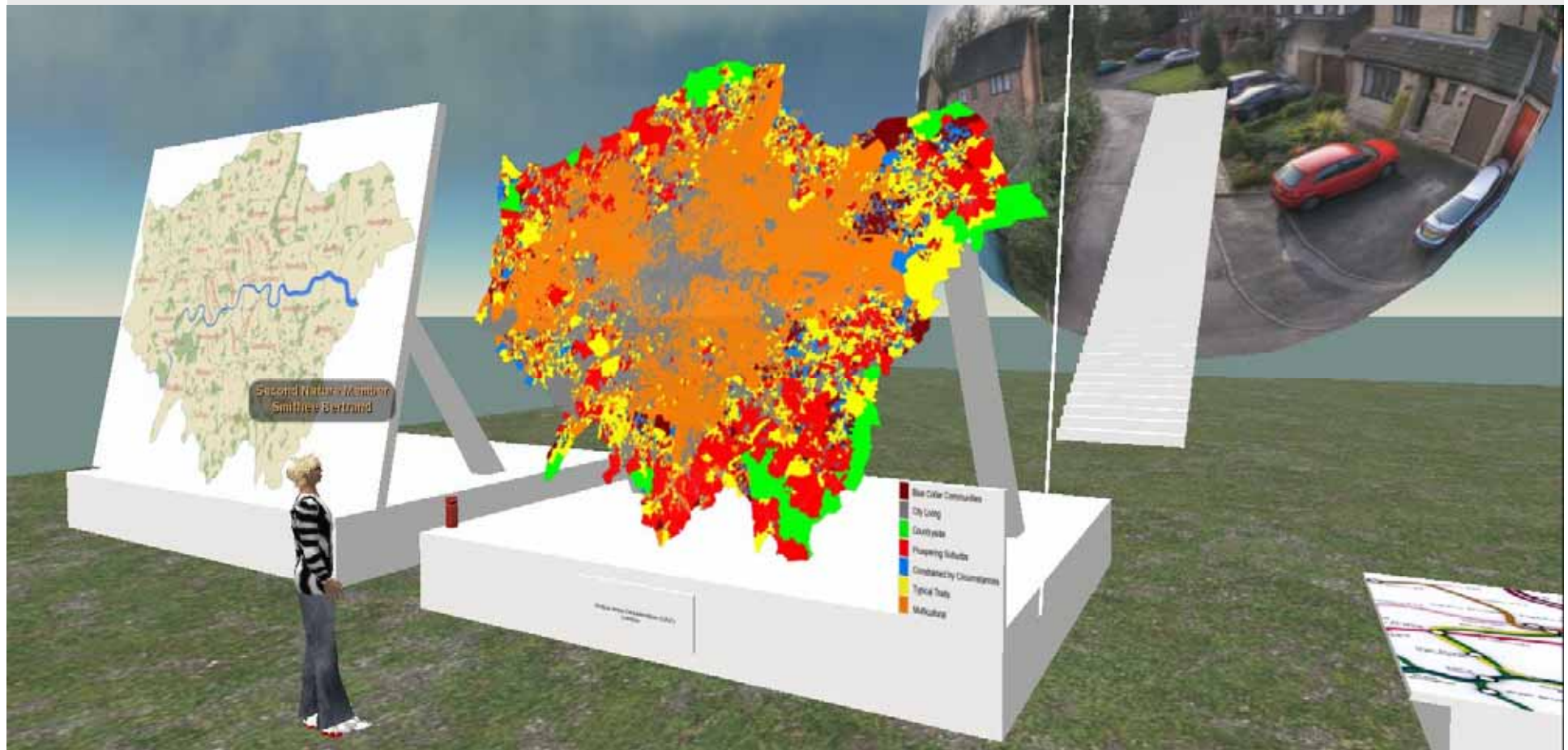
**And can we do it
all any better?**

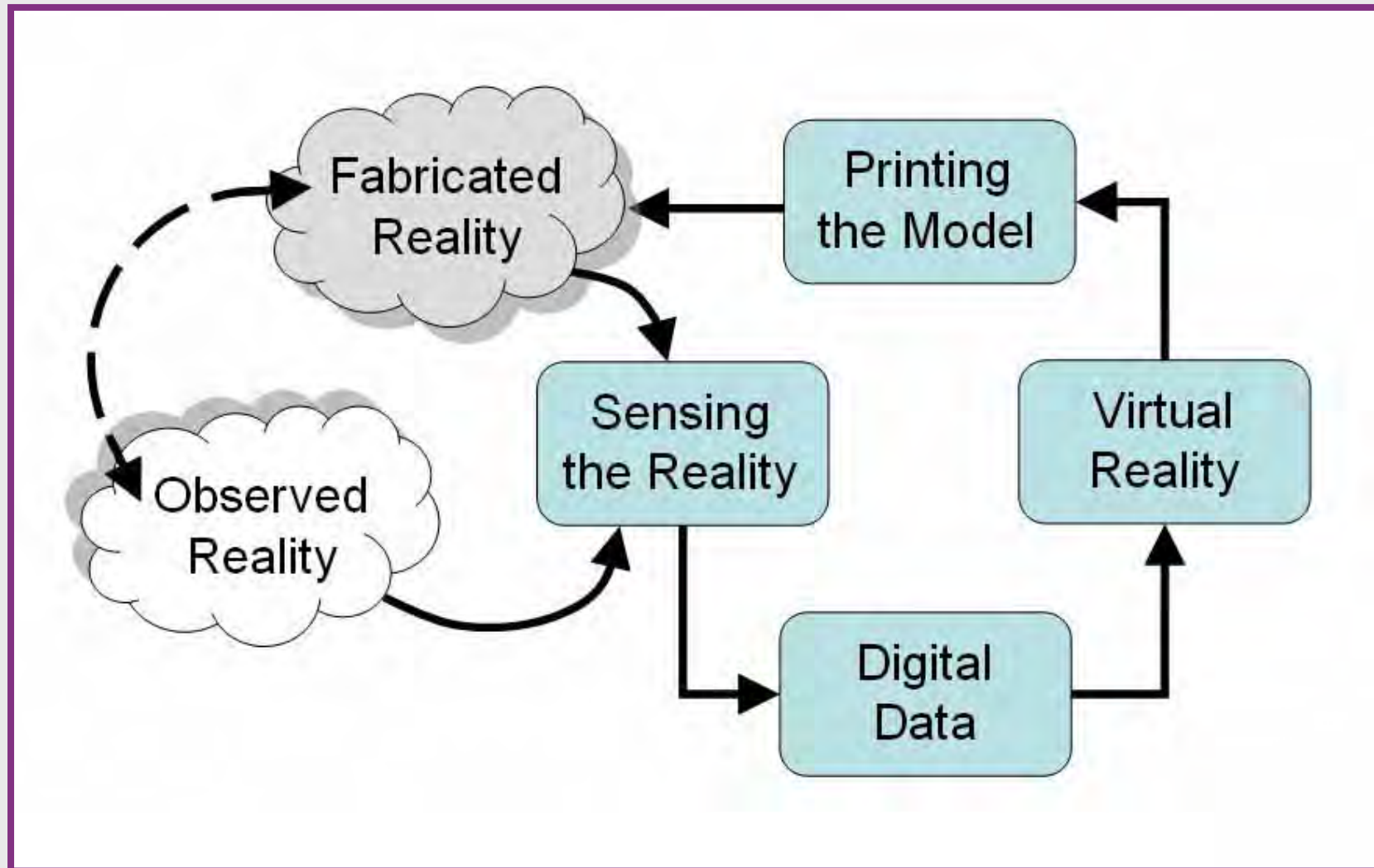




Real and Virtual Design Studios

Our recent forays are into ***Second Life*** where maps from our geodemographics project are being ported as 'geographic media' into these virtual worlds



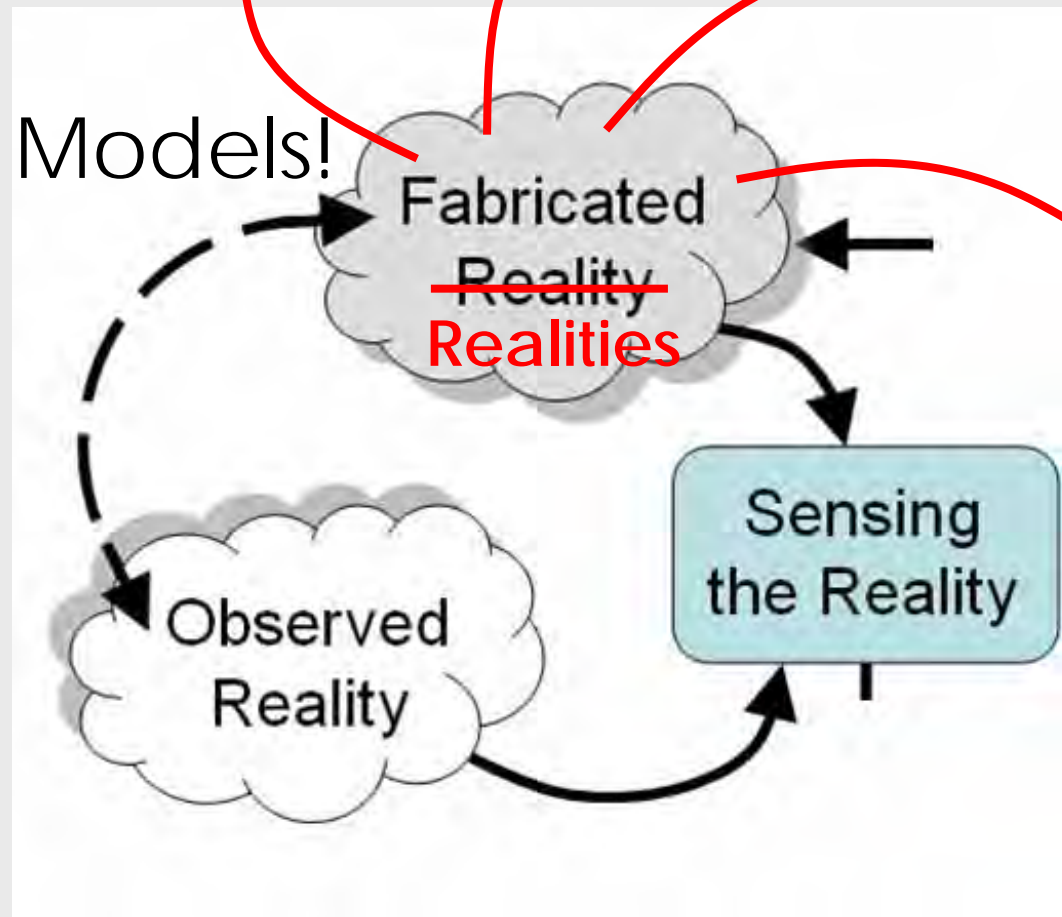
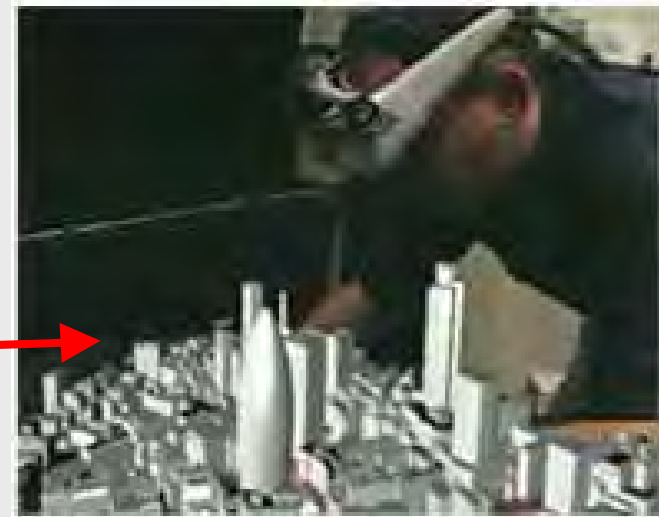
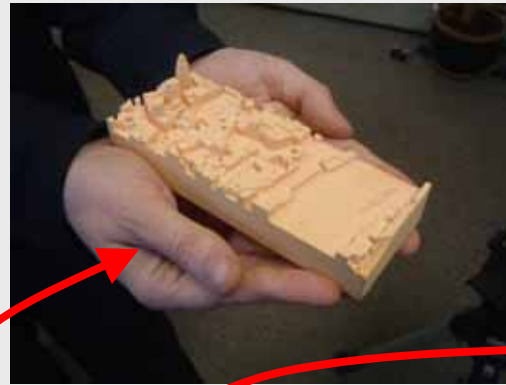


Moreover we can take this manufactured world and create other digital worlds from it, and so on

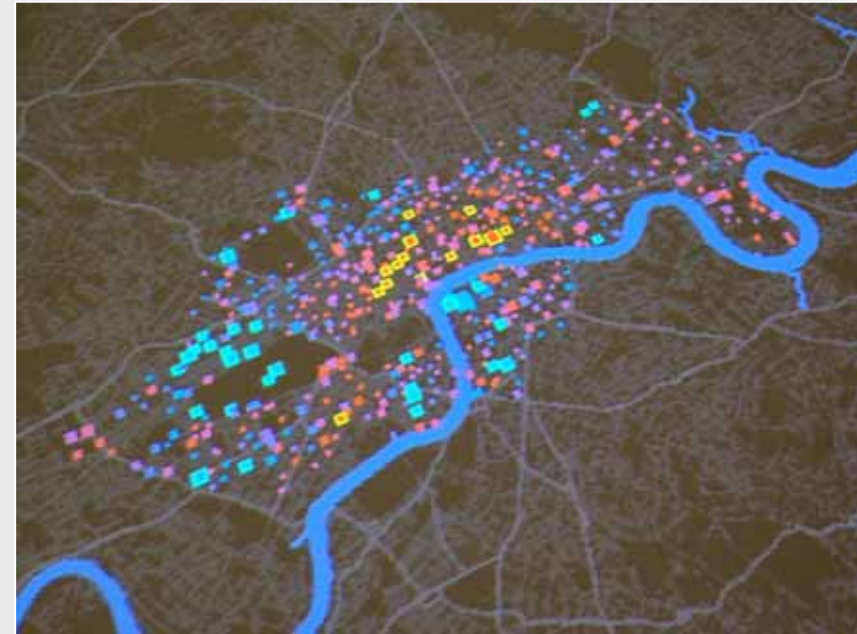
Hard Copy from Soft Copy: Printing Bits of Virtual London







Not one model
but many!

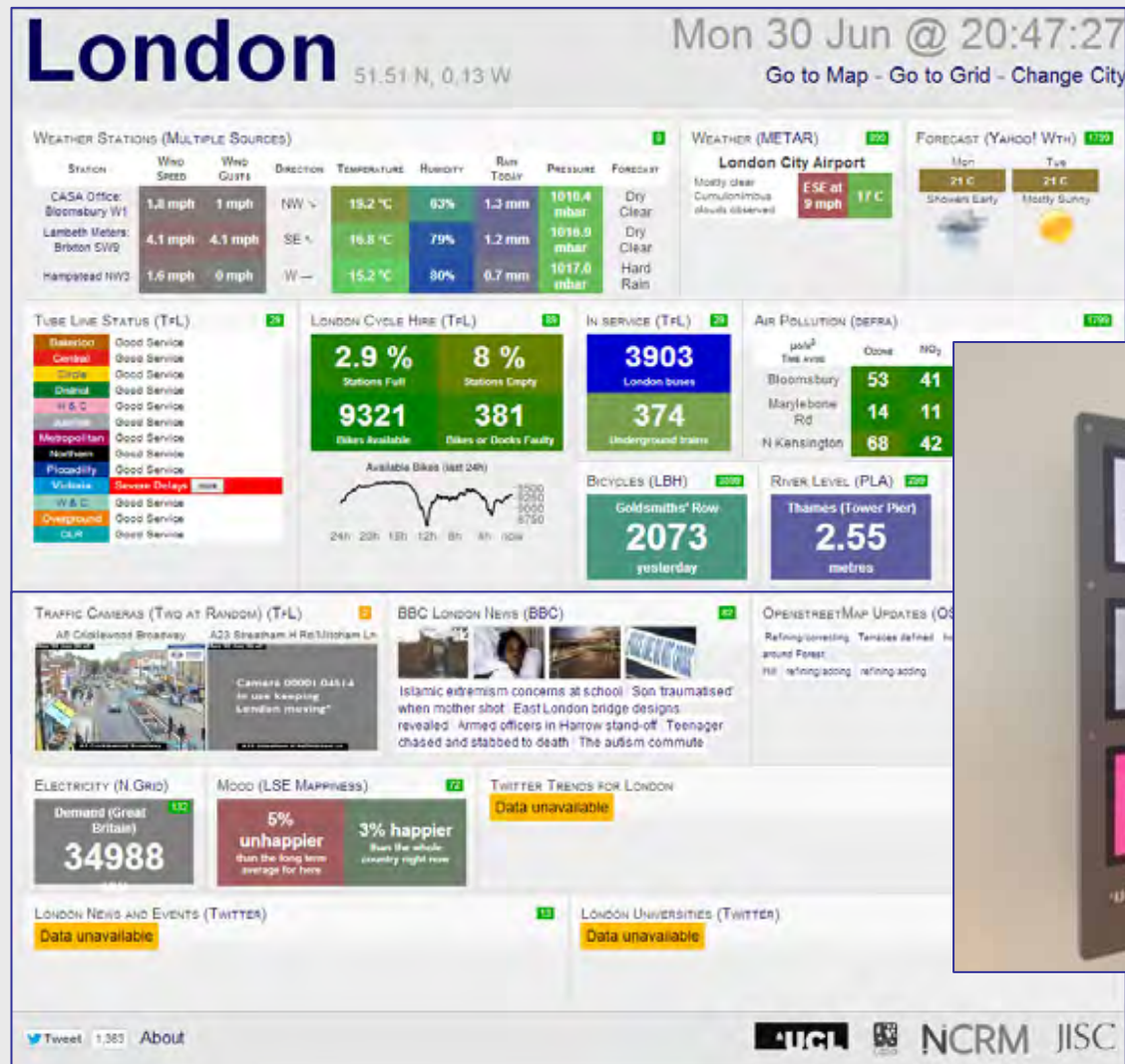




Smart Cities Lectures: The Shanghai University of Finance and Economics SUFE



Let me now deal again with portals – dashboards – you have seen some of these in a previous lecture

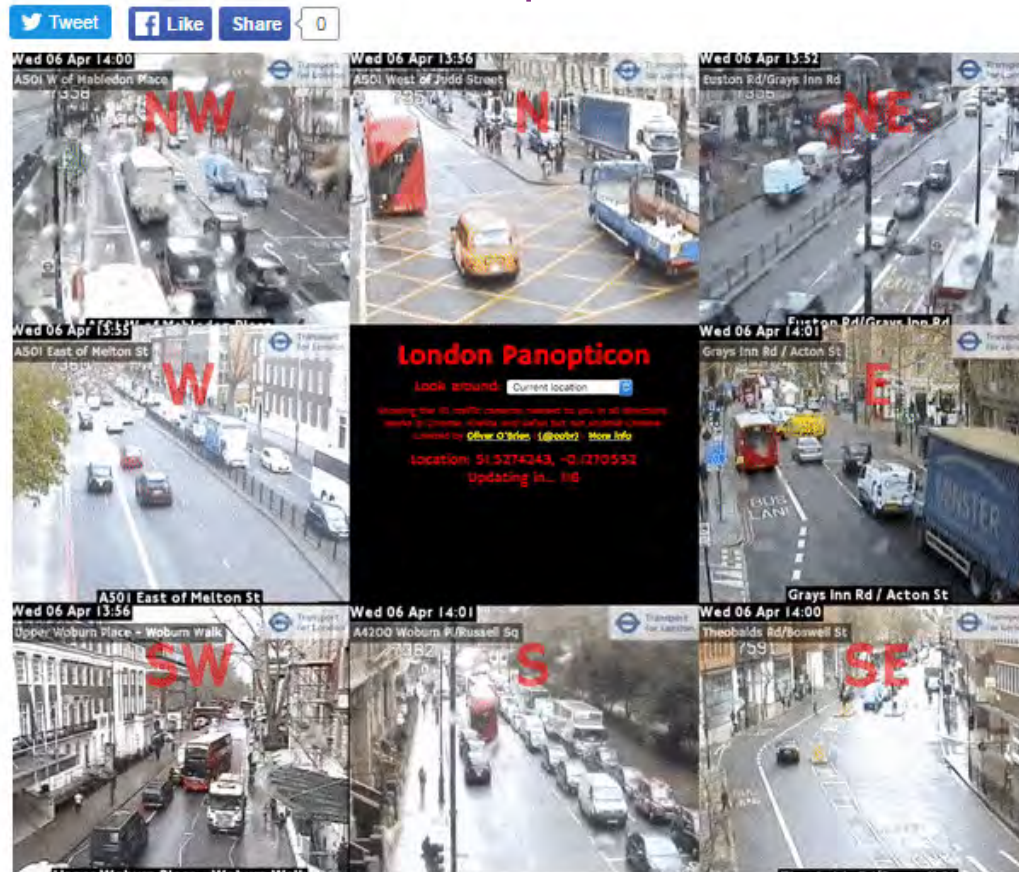




London Panopticon

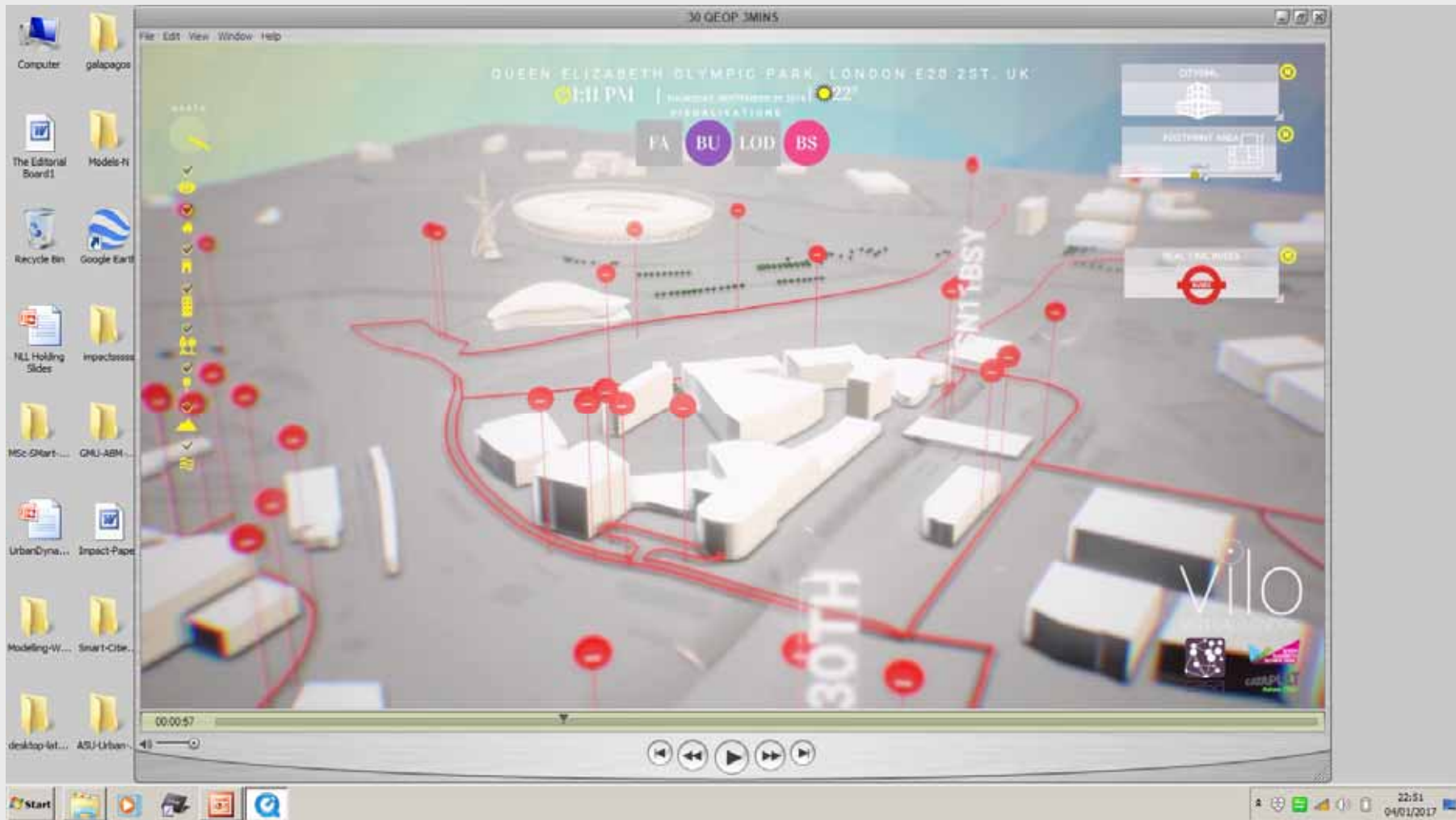
🕒 6 April 2016 📍 London

<http://vis.oobrien.com/panopticon/>





- We are building a 3D version of London which captures real time data in real time and displays it almost immediately – this kind of application is moving very fast at present and there are countless variants on the web



- Let me show this movie instead as it has some good real time content – no I can't show this one as I have to load Quick Time and we don't have time

I have a rather more detailed powerpoint of how to build a dashboard but I don't think we have time to show it

If there is, I will click on, but in any case, I will post it as an appendix to this fourth lecture

www.spatialcomplexity.info

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MAPTUBE
 a place to put maps

Radio 4: Mapping the Credit Crunch

Welcome to Radio 4 Listeners, below is the Credit Crunch question, simply select an option and then input the first part of your postcode - for example RG11

MapTube will then take your answer and every hour automatically create a map of the nation's mood.

What single factor is hurting you most about the credit crunch?

- ☐ Mortgage or Rent
- ☐ Petrol
- ☐ Food Prices
- ☐ Job Security
- ☐ Utility Bills
- ☐ Not Affected

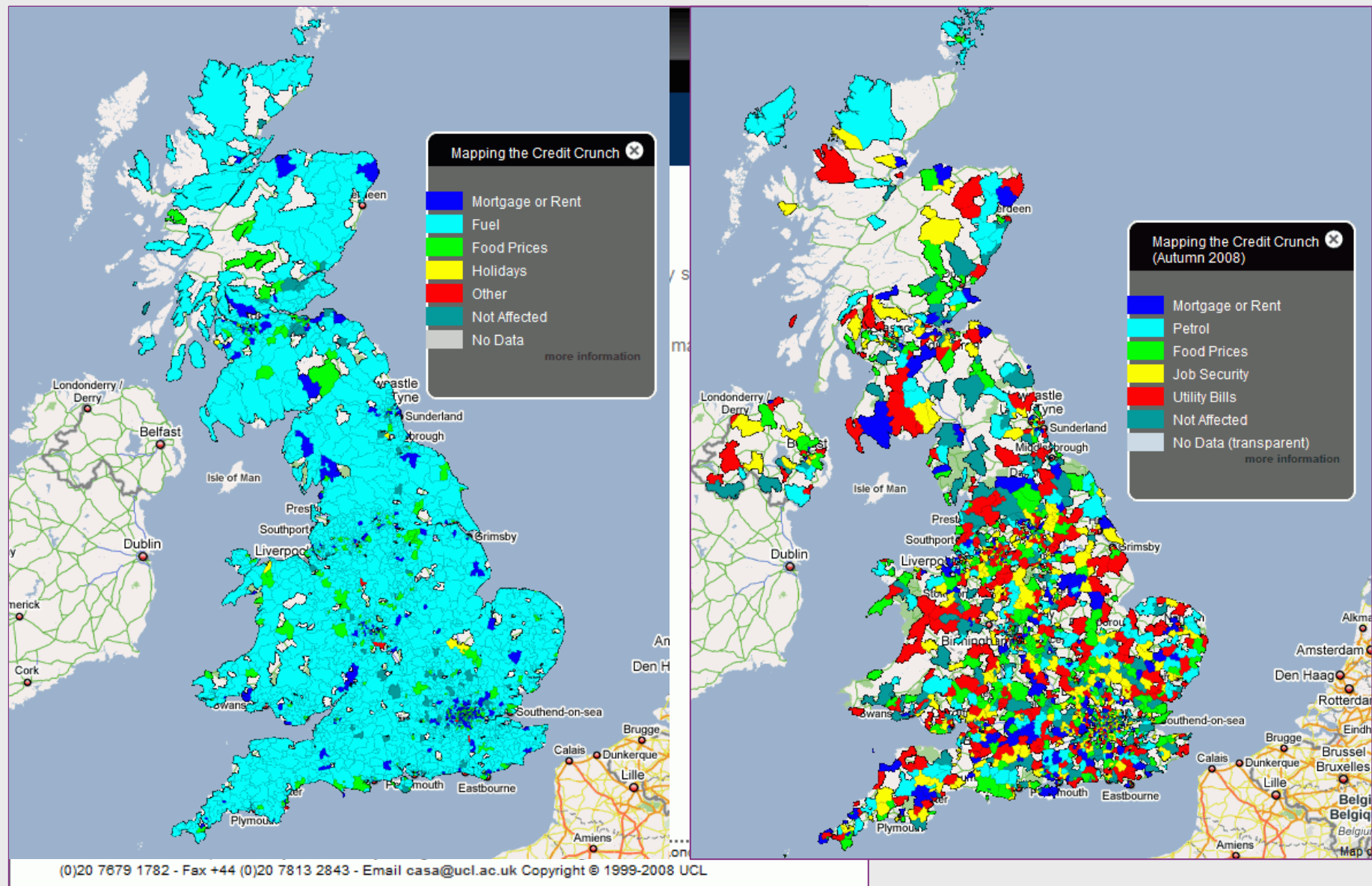
Enter the first part of your postcode:

Centre for Advanced Spatial Analysis - University College London - 1-19 Torrington Place - London - WC1E 7HB - ☎ +44 (0)20 7679 1782 - Fax +44 (0)20 7813 2843 - Email casa@ucl.ac.uk Copyright © 1999-2008 UCL

23,475 responses
April, May, June 2008

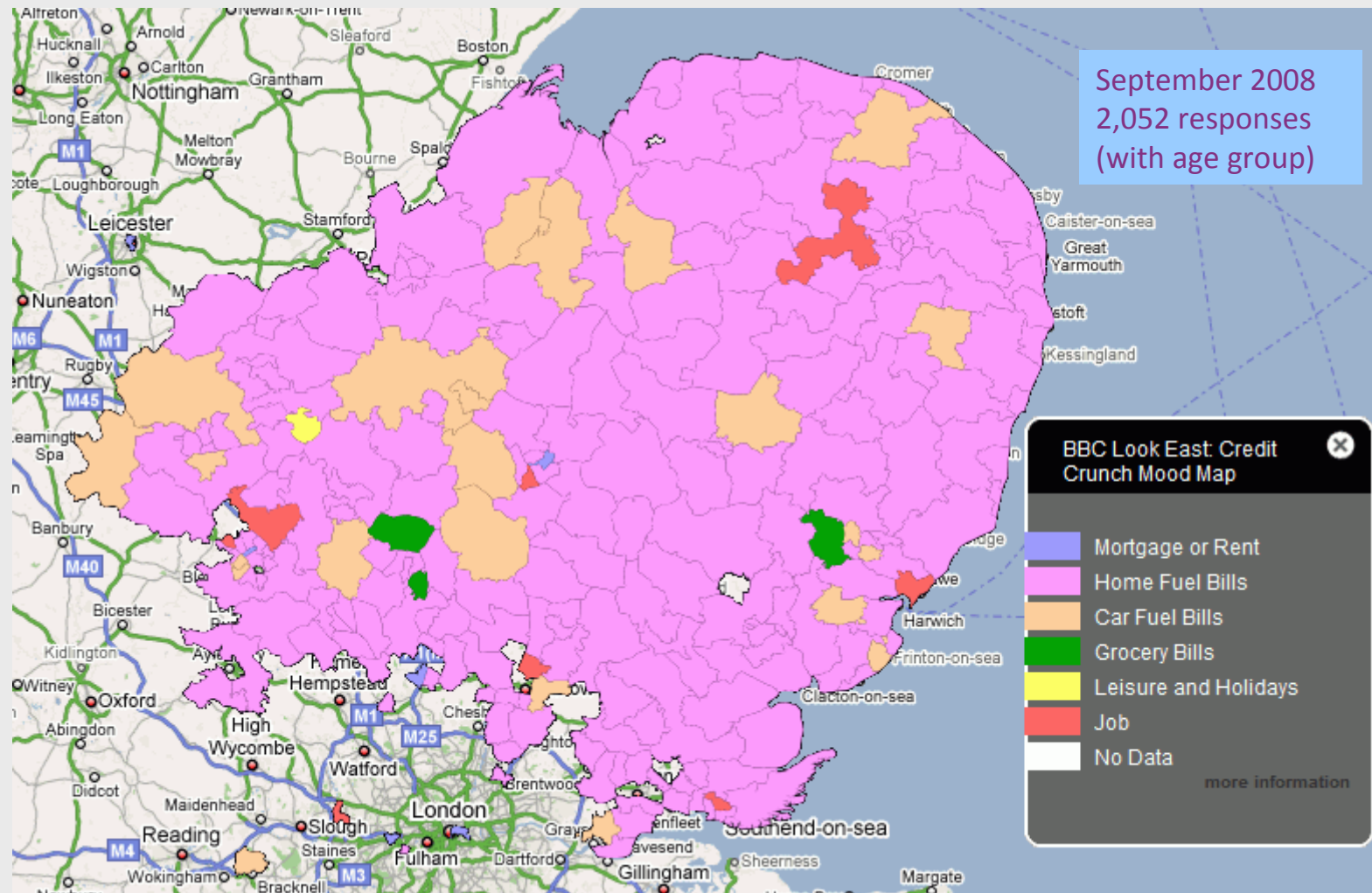
A new credit crunch survey started in October and currently has 3,802 responses.





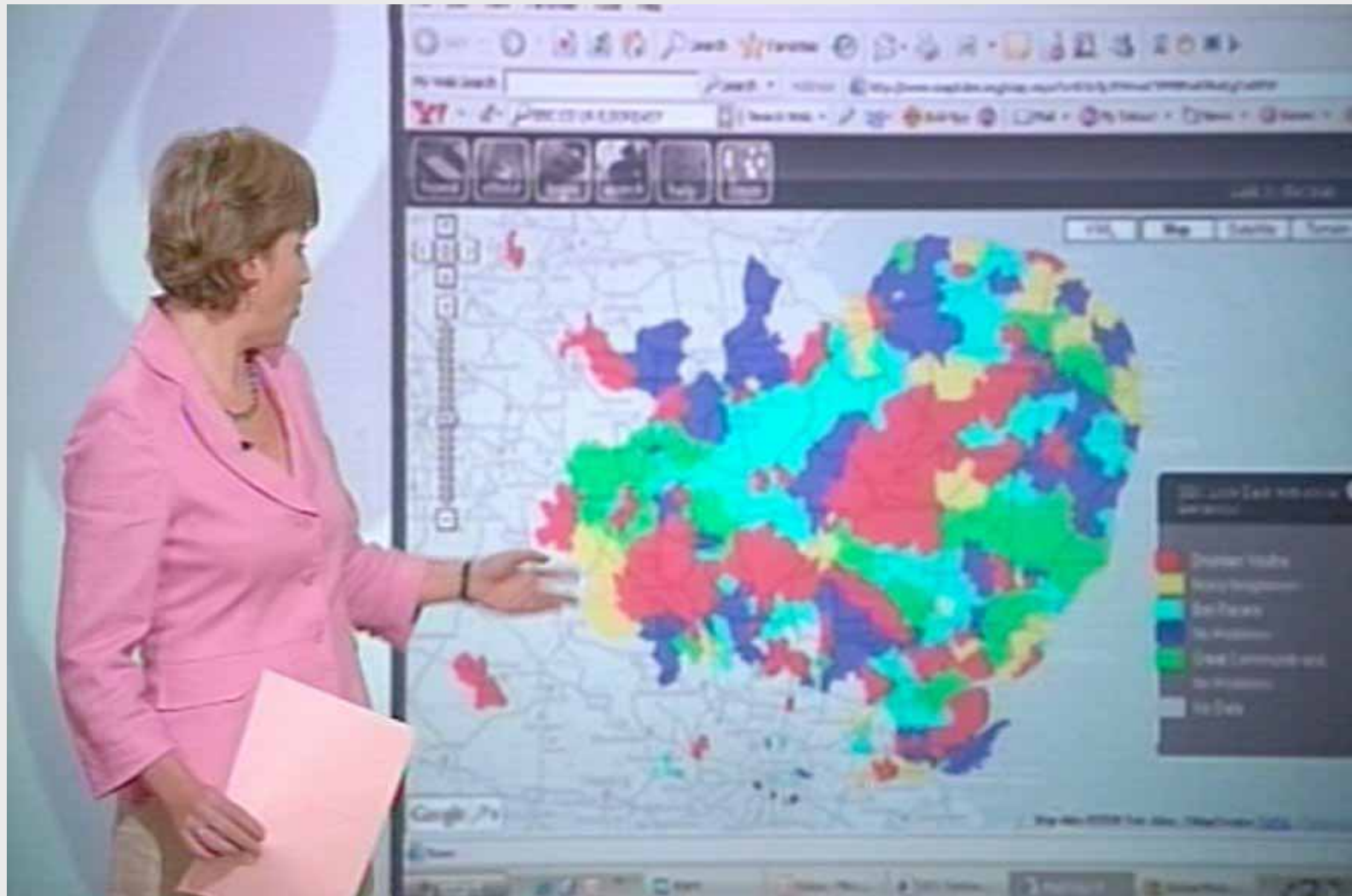
<http://www.maptube.org/creditcrunch/>

BBC Look East: Credit Crunch



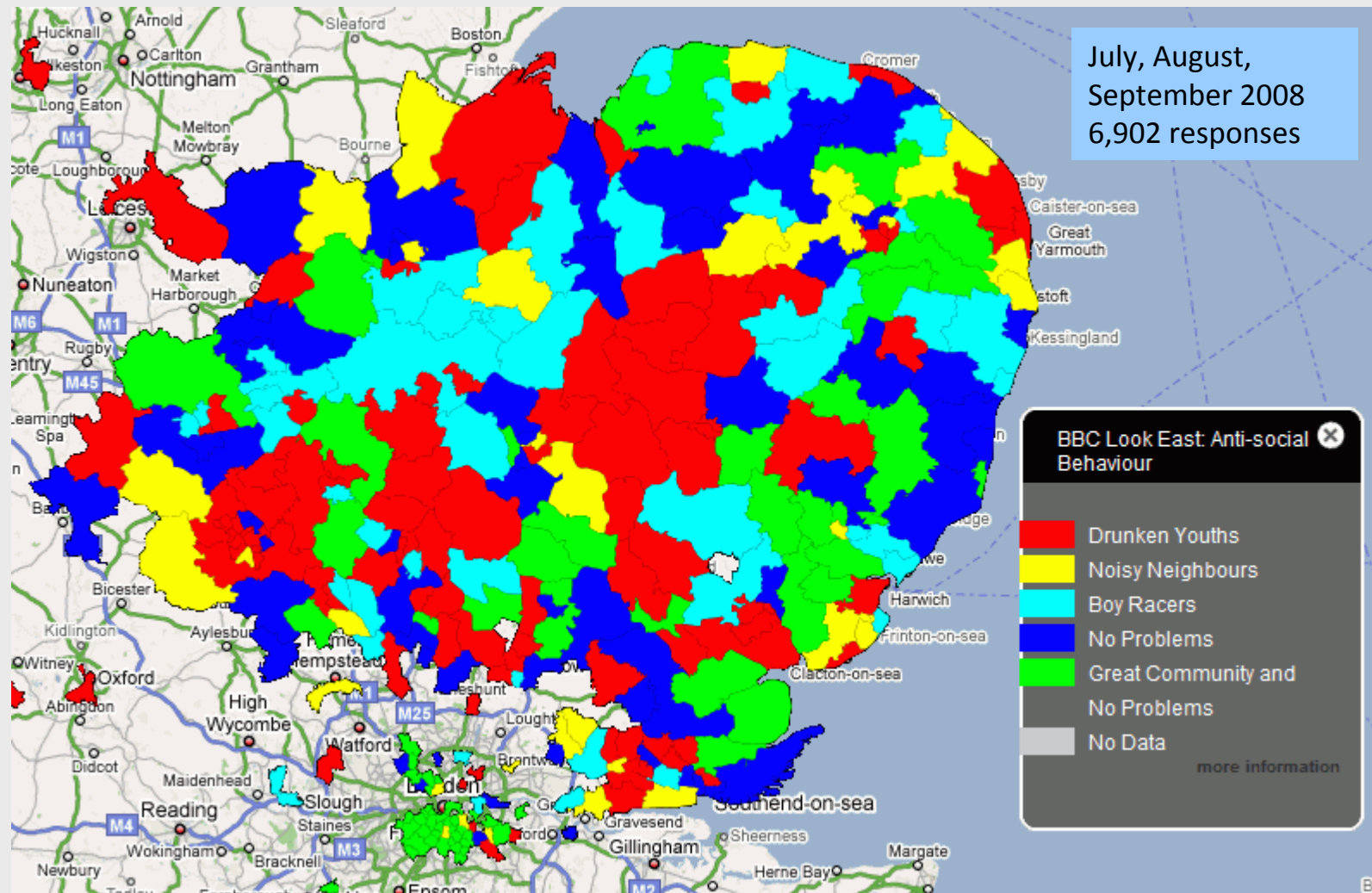
<http://www.maptube.org/LookEastCreditCrunch/>

BBC Look East: Anti-Social Behaviour



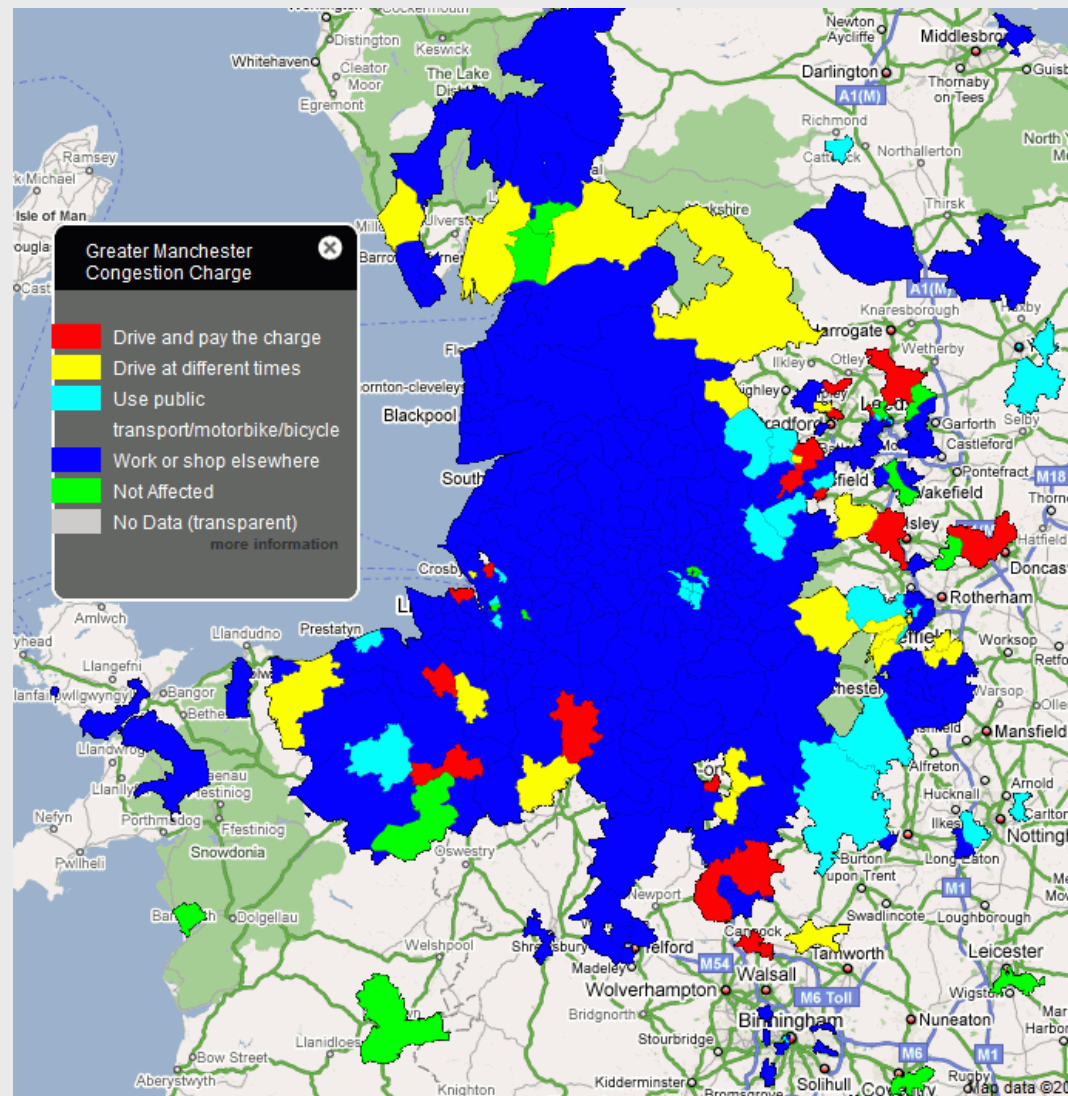
<http://www.maptube.org/lookeast>

BBC Look East: Anti-Social Behaviour

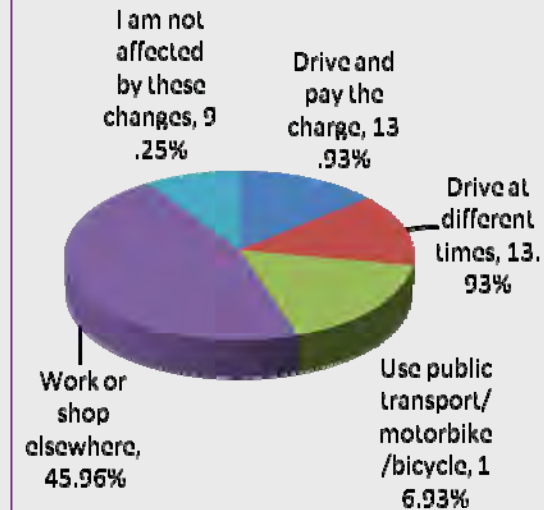


<http://www.maptube.org/lookeast>

Manchester Congestion Charge



15,902 responses
October to December 2008

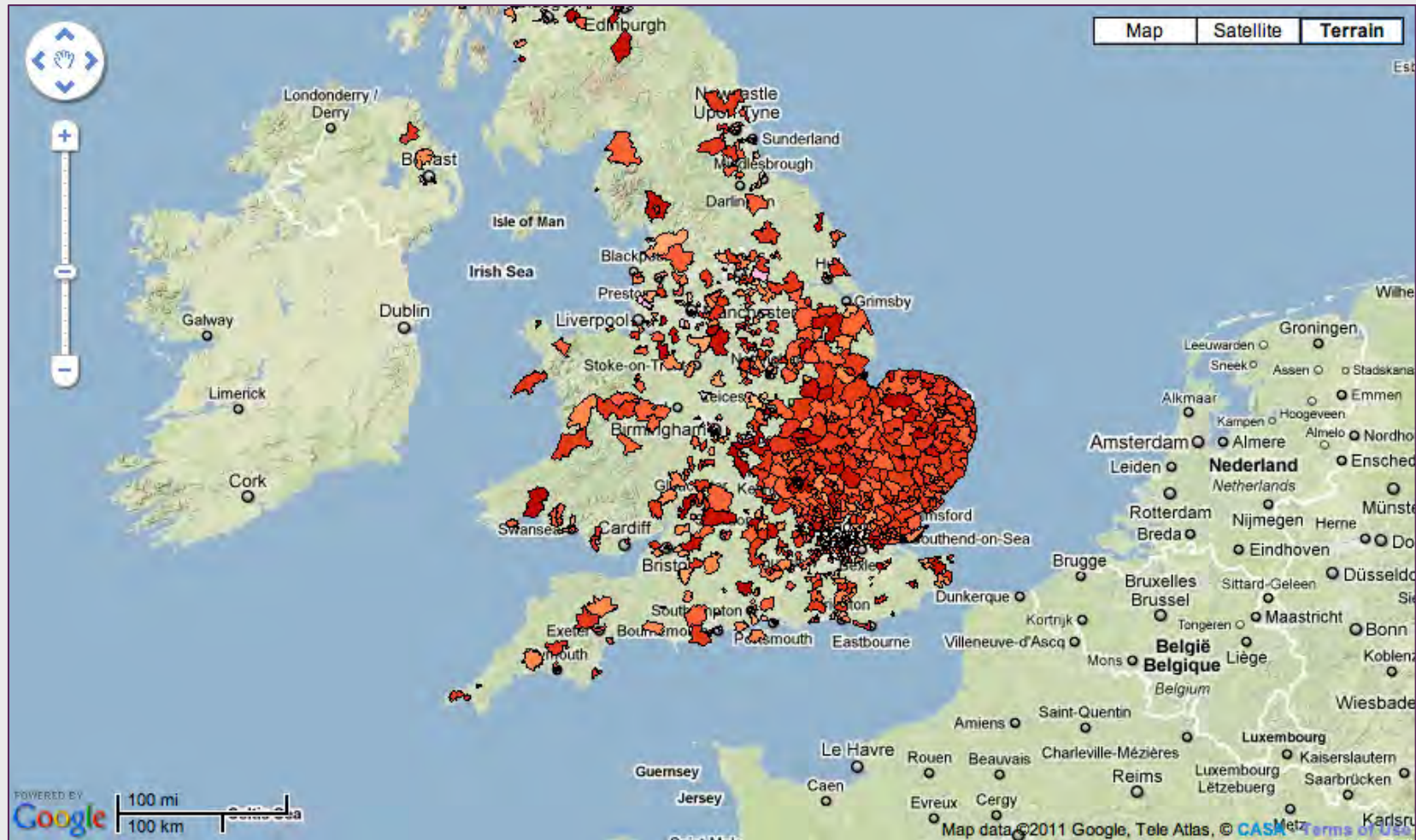


SurveyMapper

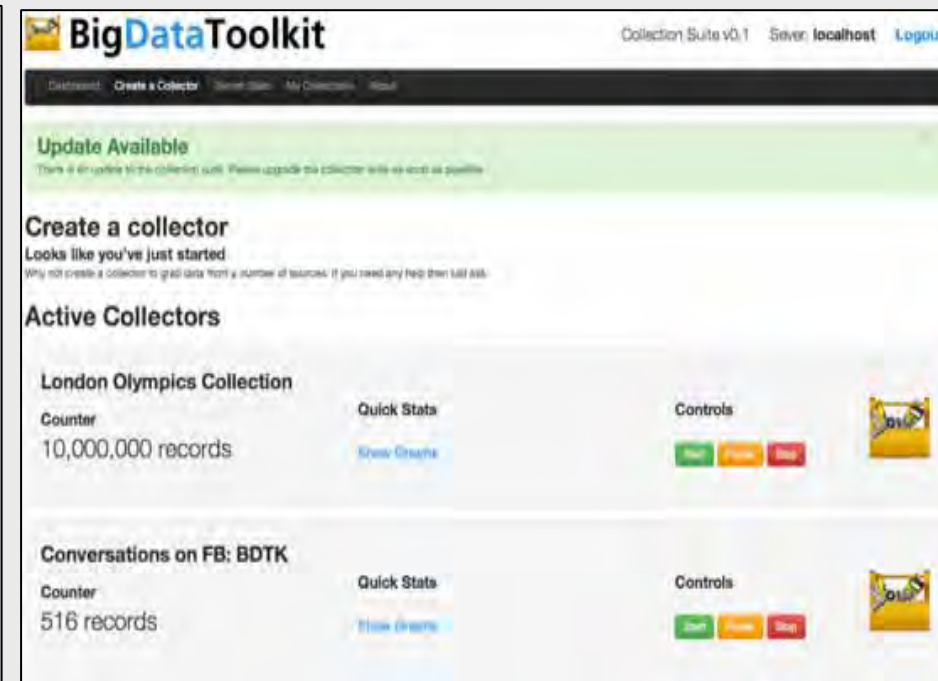
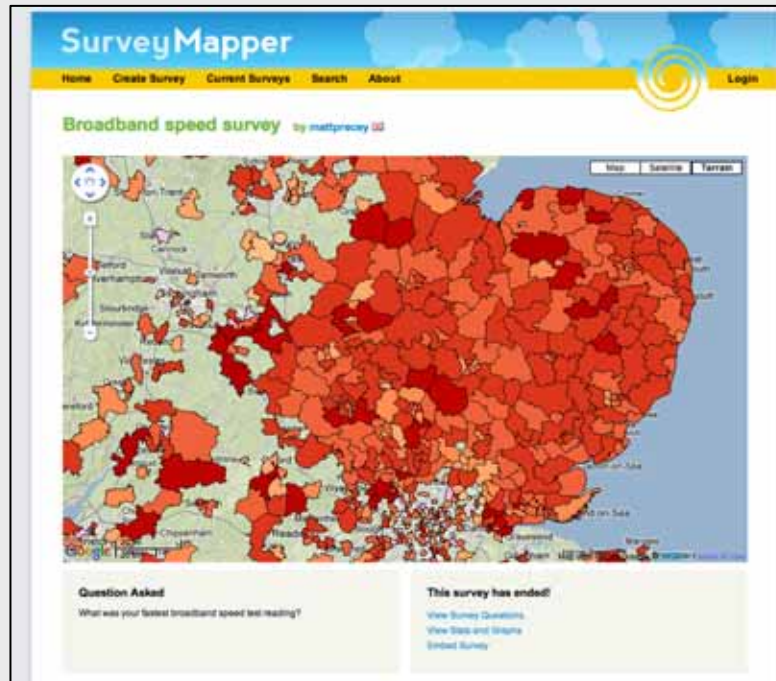
- Real-time Geographic survey tool.
- Up to 50 questions per survey
- Up to 50 answers per question
- Live stats and graphs
- Geographic Regions:
 - Worldwide Countries
 - European Countries
 - UK Counties
 - UK Postcode
 - Adding more soon
- Frequently updating regions



BBC Look East Survey - Broadband Speed Test



Data, Sensing, Capture, Extraction:



Crowd-Sourcing: Survey Mapper let's you create a survey and mount it on the web; this is part of the BigDataToolkit



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Thanks

I hope you this has given you a taste of this new world and there is no doubt that there are some very profound implications for how we do science and build policy from these developments

<http://www.complexcity.info/>
<http://www.spatialcomplexity.info/>
<http://blogs.casa.ucl.ac.uk/>

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Michael Batty



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TOMORROW URBAN MODELS LECTURES

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@j michaelbatty