Tuesday, 12 October 2010

Visualising Geographies

Map Mashups, GIS, and Multimedia in a Web 2.0 World

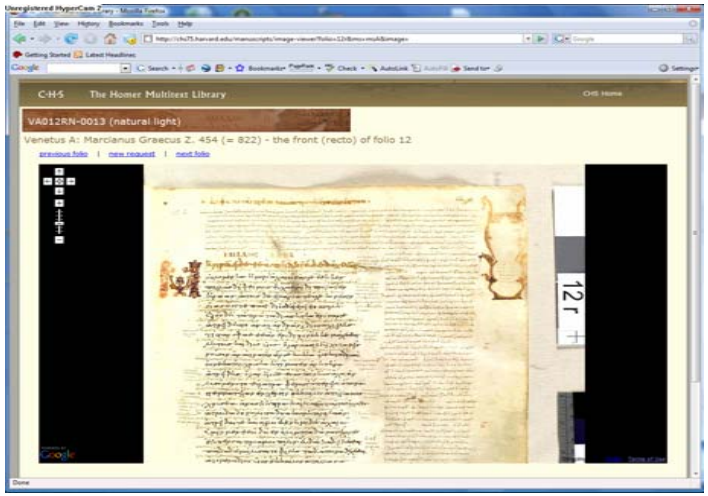
Michael Batty

University College London
www.casa.ucl.ac.uk

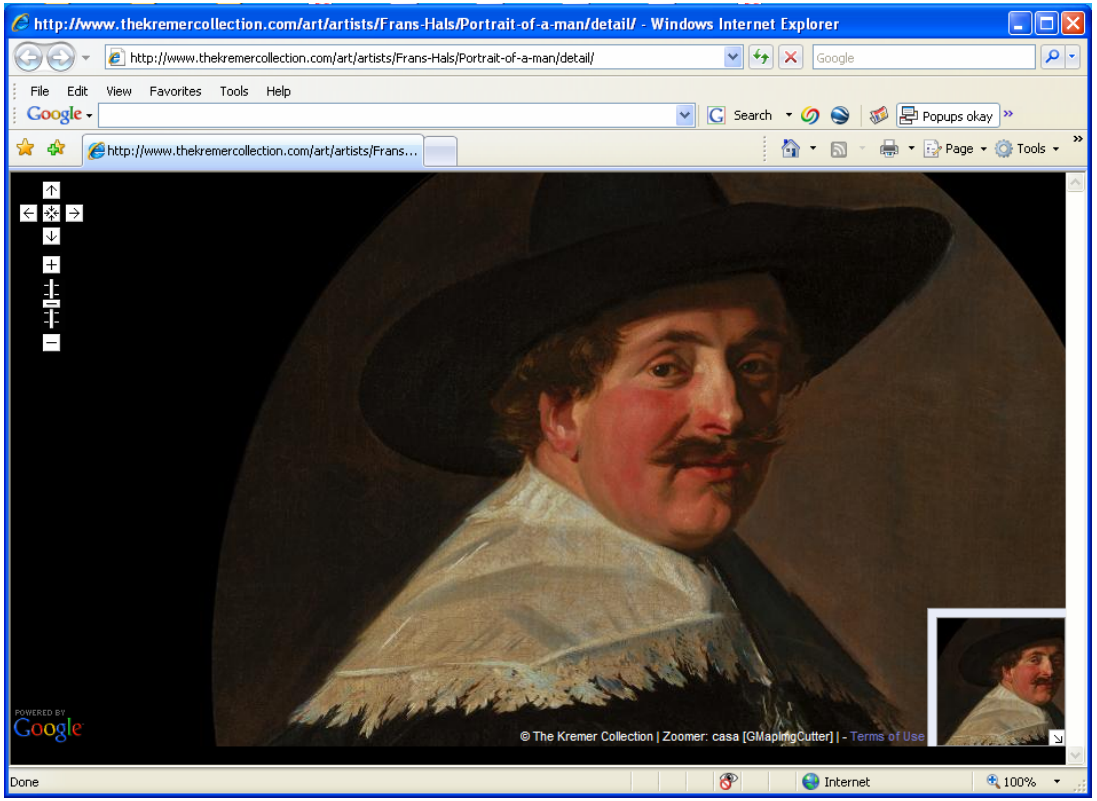
Tooth courtesy of
Johan Lundin
Biomedical Informatics Research Group
Department of Oncology
University of Helinski
http://www.webmicroscope.net/

The Kremer Collection

http://www.thekremercollection.com/



http://chs75.harvard.edu/manuscripts/



One of my key points in this talk is that software being developed for a particular spatial application often easily generalises to a quite different one ….. But let me first outline my talk before elaborating

Outline

Pushing pictures – displaying and communicating data, spatial data – it's all about Web 2.0!

GMapCreator and ***ImageCutter***

MapTube: a kind of ***YouTube*** + ***Napster***

Pulling pictures – pulling spatial data – crowdsourcing

Survey Mapper, Twitter and online streaming

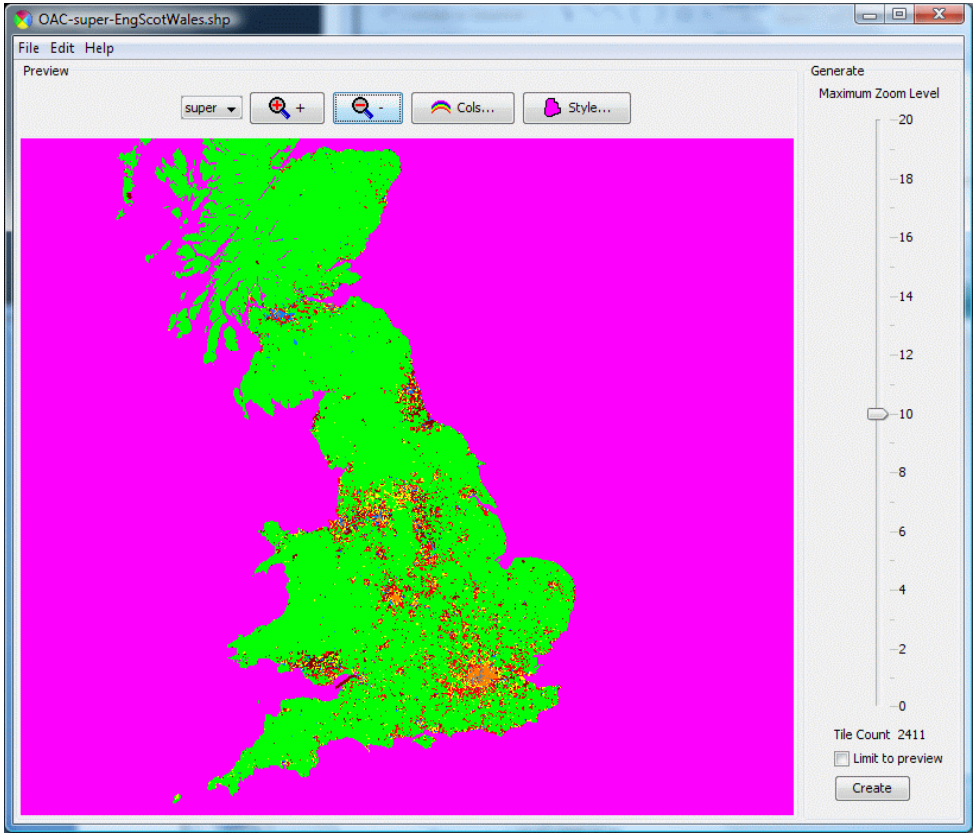
2D to 3D: GIS to CAD and back and on the web

From geometry to geography and back – populating really large spatial data bases

The future – disseminating spatial data in multimedia –

GMapCreator and ***ImageCutter***

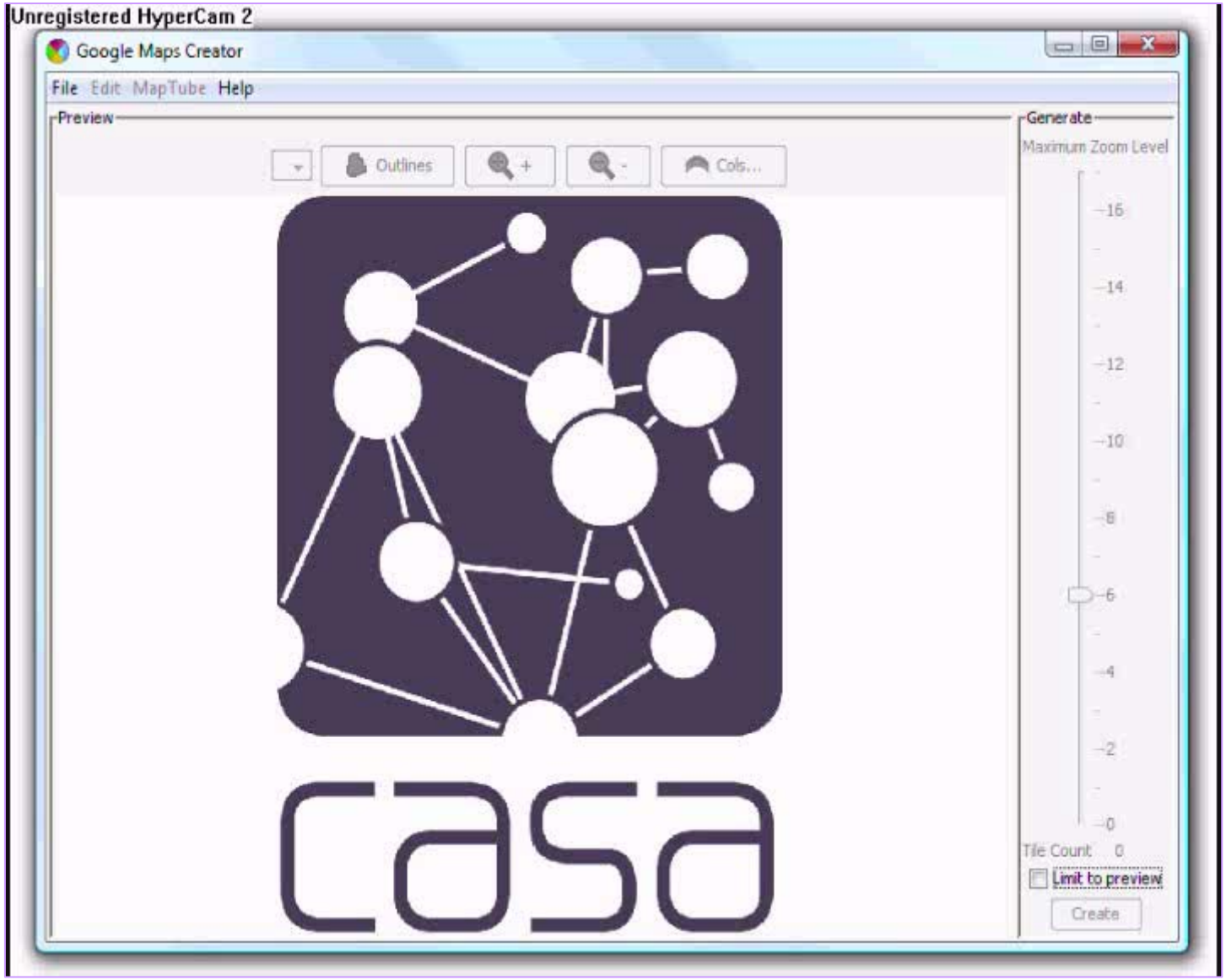
The ***Google Map Creator*** creates ***Google Maps*** websites from thematic data contained in shapefiles.



It effectively layers your map on top of a ***Google Map*** or the ***Google Map***

Don't be misled – a map is not a picture – it is a bunch of vector geometries and a set of attributes – and a shape file is a proprietary but widely used format by ESRI – the makers of **ArcGIS** – that map files can be converted to prior to use in ***GMapCreator***

Let us see how it works


Unregistered HyperCam 2
Google Maps Creator
File Edit MapTube Help
Preview
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Tile Count 0
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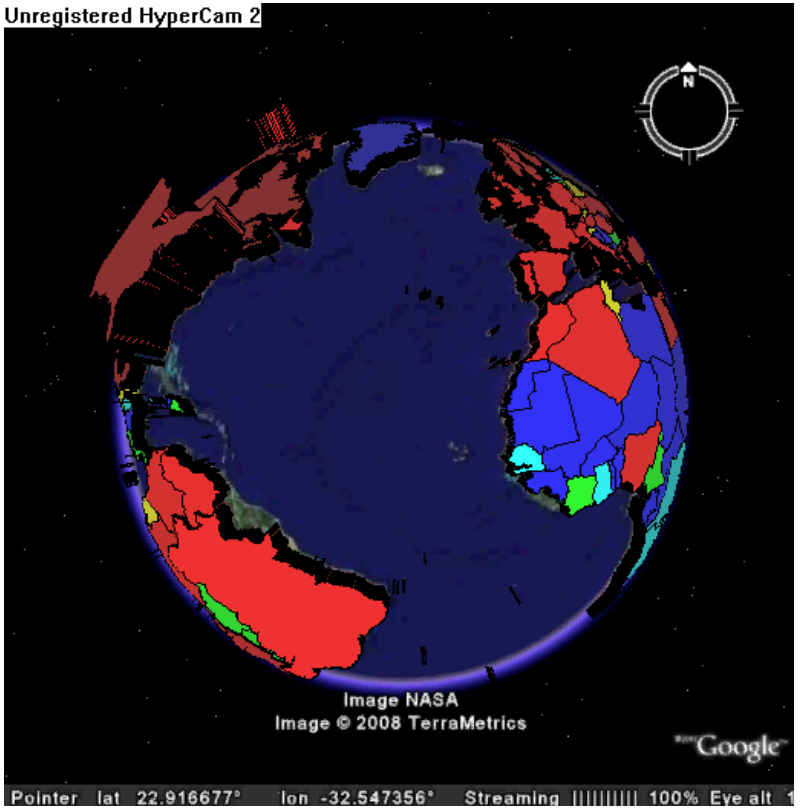
casa

We can do the same sort of thing in 3D of course with ***GEarthCreator*** – the key is to convert the shapefiles to KML files – and there are many other maphacks using similar open map bases like ***Open Street Map***



From all of this we have devised an open resource for maps called ***MapTube***

CASA Centre for Advanced Spatial Analysis UCL - CASA News -
http://www.casa.ucl.ac.uk/
File Edit View Favorites Tools Help
Google
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Search CASA's site
casa
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[+] EVENTS
[+] PEOPLE
[+] BLOGS
[+] WEBSITES
[+] PUBLICATIONS
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Image Cutter
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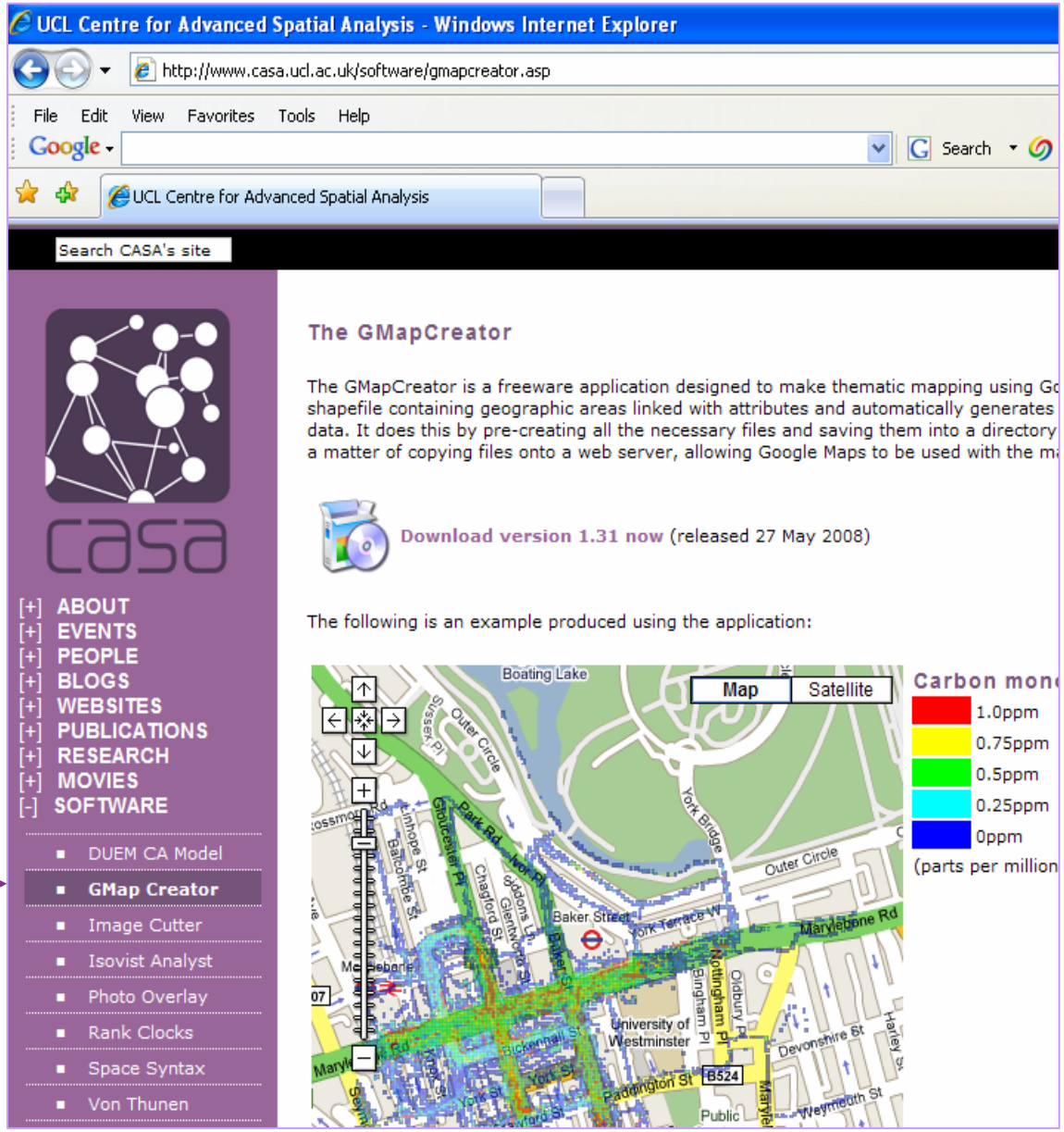
UCL Centre for Advanced Spatial Analysis - Windows Internet Explorer
http://www.casa.ucl.ac.uk/software/gmapcreator.asp
File Edit View Favorites Tools Help
Google
Search
UCL Centre for Advanced Spatial Analysis
Search CASA's site
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DUEM CA Model
GMap Creator
Image Cutter
Isovist Analyst
Photo Overlay
Rank Clocks
Space Syntax
Von Thunen
The GMapCreator
The GMapCreator is a freeware application designed to make thematic mapping using Go
shapefile containing geographic areas linked with attributes and automatically generates
data. It does this by pre-creating all the necessary files and saving them into a directory
a matter of copying files onto a web server, allowing Google Maps to be used with the ma
Download version 1.31 now (released 27 May 2008)
The following is an example produced using the application:
Map
Satellite
Boating Lake
Outer Circle
York Bridge
Baker Street
Marylebone Rd
University of Westminster
Paddington St
B524
Carbon mono
1.0ppm
0.75ppm
0.5ppm
0.25ppm
0ppm
(parts per million

MapTube: a kind of ***YouTube*** + ***Napster***

Let me explain: every time someone downloads our software, there is a high probability they make a map.

As it sits on a common base – a ***Google Map*** – if they create the map of some place and someone else creates another map of the same place, it would be nice if we or they could compare them as layers

However, in the UK map bases are copyrighted – you can done for copying OS map data and it is serious –

So we ask the user not to put their map created from our software on our site, but to give us their URL where their map is and thus ***MapTube*** is a bunch of pointers to URLs - this is what it looks like with demo

http://www.maptube.org/

Live Search

File Edit View Favorites Tools Help

MapTube

Page Tools

home about login search help casa

MAPTUBE
a place to put maps

Welcome to MapTube

MapTube is a free resource for viewing, sharing, mixing and mashing maps online. Created by UCL's Centre for Advanced Spatial Analysis, users can select any number of maps to overlay and view.

QuickStart

Click any map below to view it. To select a combination of maps, use the Search page. More information is available in the Help section.

Map of the Week

Big Mac Index

This map illustrates how the price of a Big Mac varies across the world. View the Big Mac Index here

Popular Maps | Recently Viewed | Latest Uploads

Showing records 1 to 12 of 128:

Mapping the Credit Crunch

Radio 4: Mapping the Credit Crunch

more information

Viewed 15272 times

London Tube Map

A map of the London Underground with geographically correct station positions taken from wikimedia.

more information

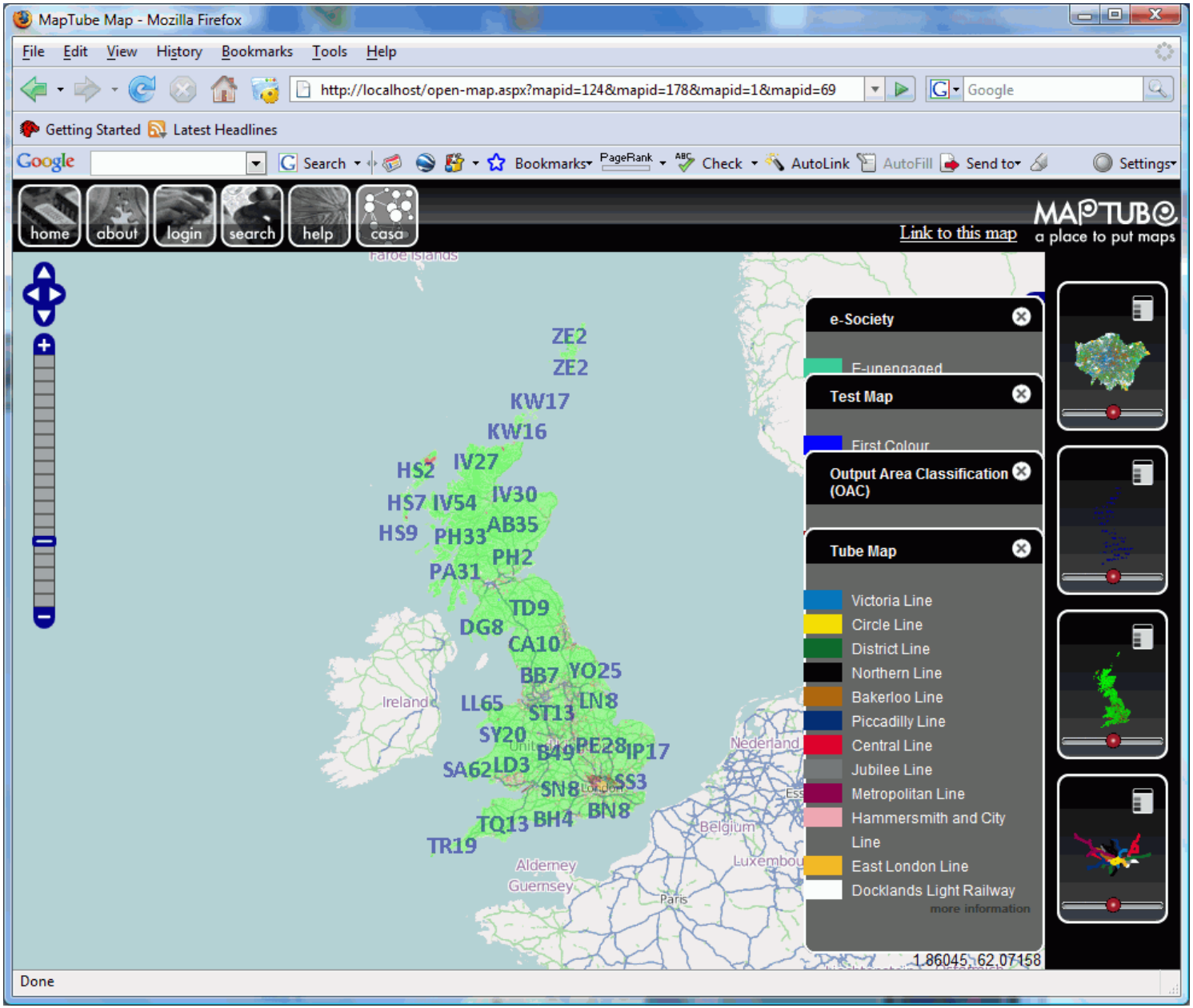
Viewed 7362 times

BBC Look East: Anti-social Behaviour

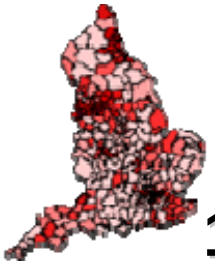
Mapping anti-social behaviour in the eastern counties in conjunction with BBC Look East.

Global MacDonalds Big Mac Prices 2007

Illustrates the local price (in USD) of a MacDonalds BigMac in various countries round the world.


MapTube Map - Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://localhost/open-map.aspx?mapid=124&mapid=178&mapid=1&mapid=69
Getting Started Latest Headlines
home about login search help casa
Link to this map
MAPTUBE
a place to put maps
e-Society
E-unengaged
Test Map
First Colour
Output Area Classification (OAC)
Tube Map
Victoria Line
Circle Line
District Line
Northern Line
Bakerloo Line
Piccadilly Line
Central Line
Jubilee Line
Metropolitan Line
Hammersmith and City Line
East London Line
Docklands Light Railway
more information
ZE2
KW17
KW16
IV27
HS2
HS7
IV54
IV30
HS9
PH33
AB35
PH2
PA31
TD9
DG8
CA10
BB7
YO25
LL65
LN8
ST13
SY20
PE28
IP17
SA62
LD3
SS3
SN8
BN8
TQ13
BH4
TR19
Ireland
Alderney
Guernsey
Paris
Belgium
Nederland
1.86045, 62.07158
Done

Here are some of the user map data in/on **MapTube**


1

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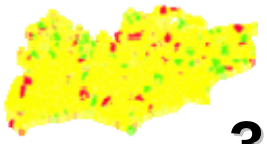
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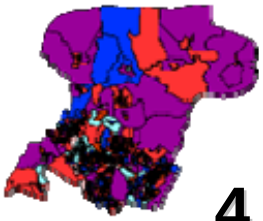
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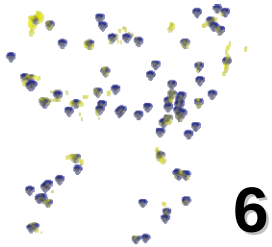
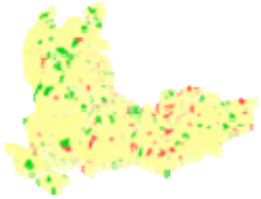

6

1. Knife Crime Update, **2.** SC IMD Score, **3.** SEC IMD Score, **4.** PCT Obesity, **5.** NO_2 Bristol, **6.** AGFC Wildlife

The data behind the knife crimes map (1) has been in the news the last few days after it emerged that the Government had manipulated the data.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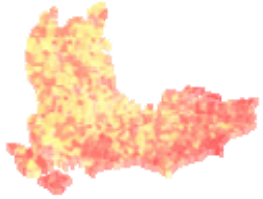
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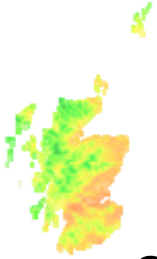
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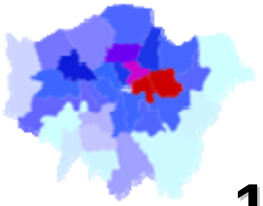

10

11

7. Southeast IMD, **8.** Southeast IMD (LSOA), **9.** Wild Land Quality Scotland, **10.** NSSeC L8 (never worked)%, **11.** CO_2 index

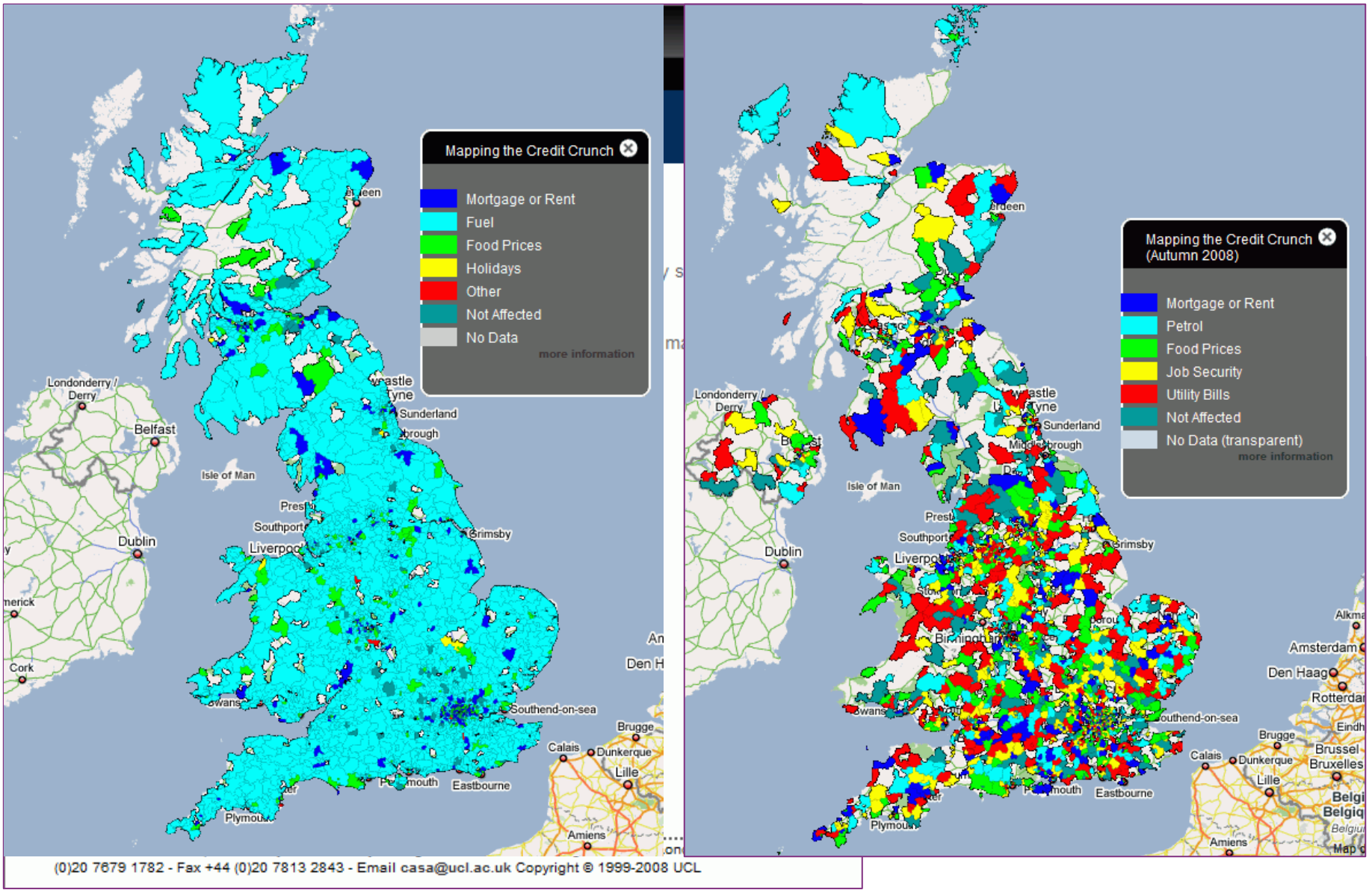
Pulling pictures – pulling spatial data – crowd-sourcing

We have turned all this around and basically used the system to record spatial responses to topical questions

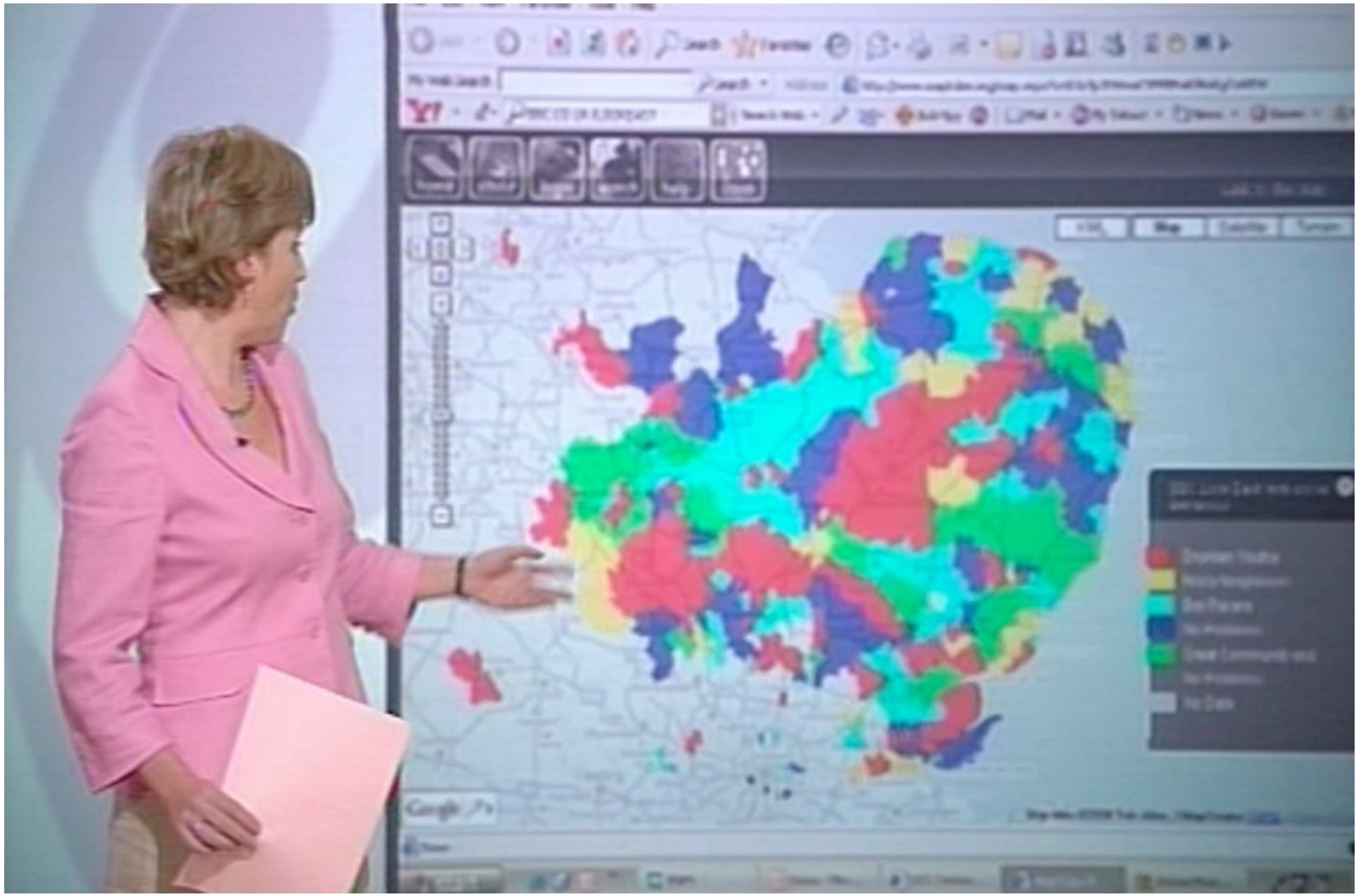
We broadcast the questions through TV and radio and then ask users to respond and key in their post code – 7 digit in UK but actually only record postcode sector – first three or four digits

Then our server issues a request to scan the continually refreshed database and rebuilds the map on the fly so to speak, every half hour, using GMapCreator etc

We have so far looked at the credit crunch, antisocial behaviour and the Manchester road pricing proposal

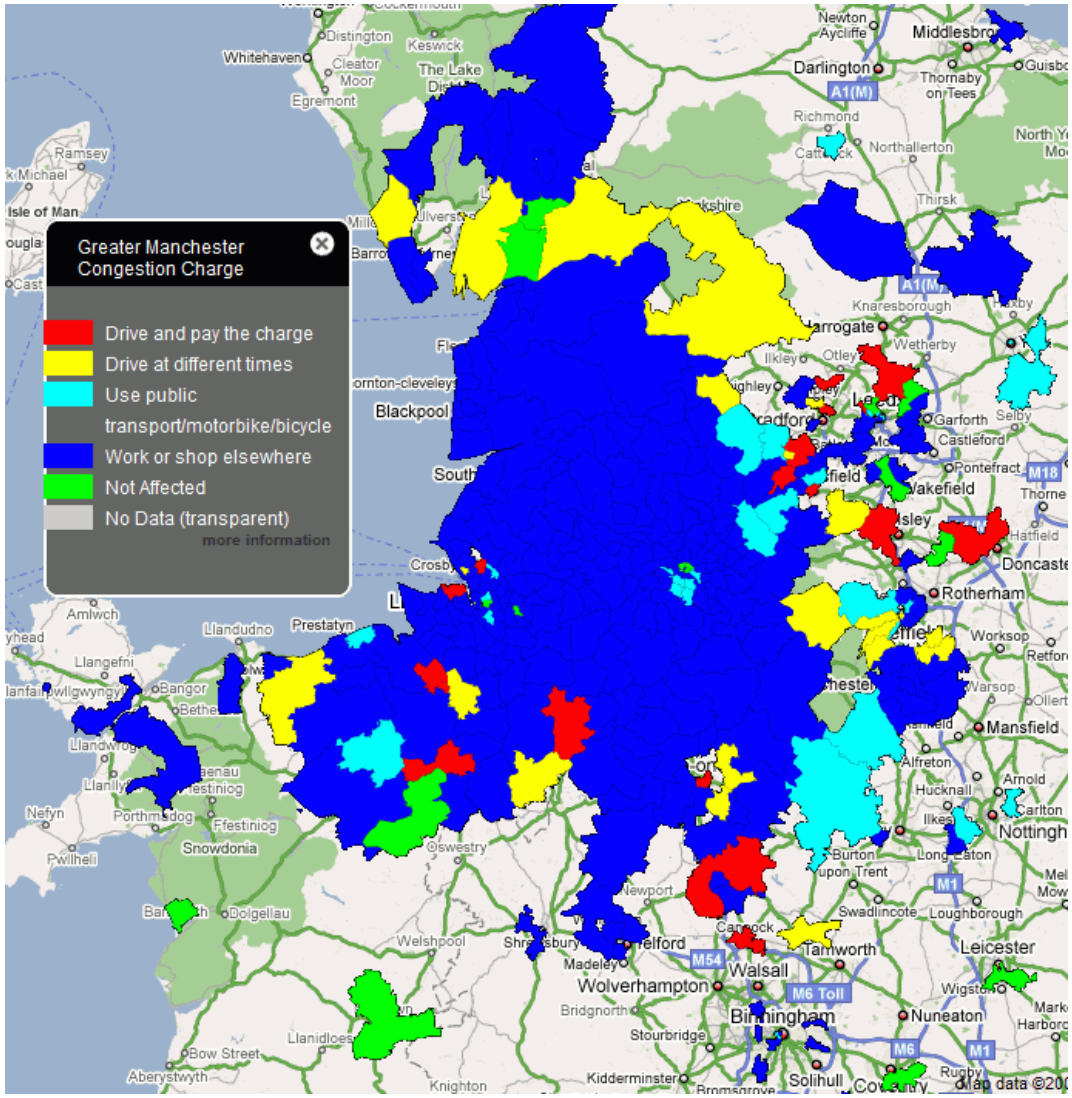

Mapping the Credit Crunch
Mortgage or Rent
Fuel
Food Prices
Holidays
Other
Not Affected
No Data
more information
Mapping the Credit Crunch (Autumn 2008)
Mortgage or Rent
Petrol
Food Prices
Job Security
Utility Bills
Not Affected
No Data (transparent)
more information
Londonderry / Derry
Belfast
Dublin
Isle of Man
Sunderland
Southport
Liverpool
Grimsby
Southend-on-sea
Brugge
Calais
Dunkerque
Lille
Eastbourne
Plymouth
Amiens
Amsterdam
Den Haag
Rotterdam
Brussels
Bruxelles
(0)20 7679 1782 - Fax +44 (0)20 7813 2843 - Email casa@ucl.ac.uk Copyright © 1999-2008 UCL

BBC Look East: Anti-Social Behaviour

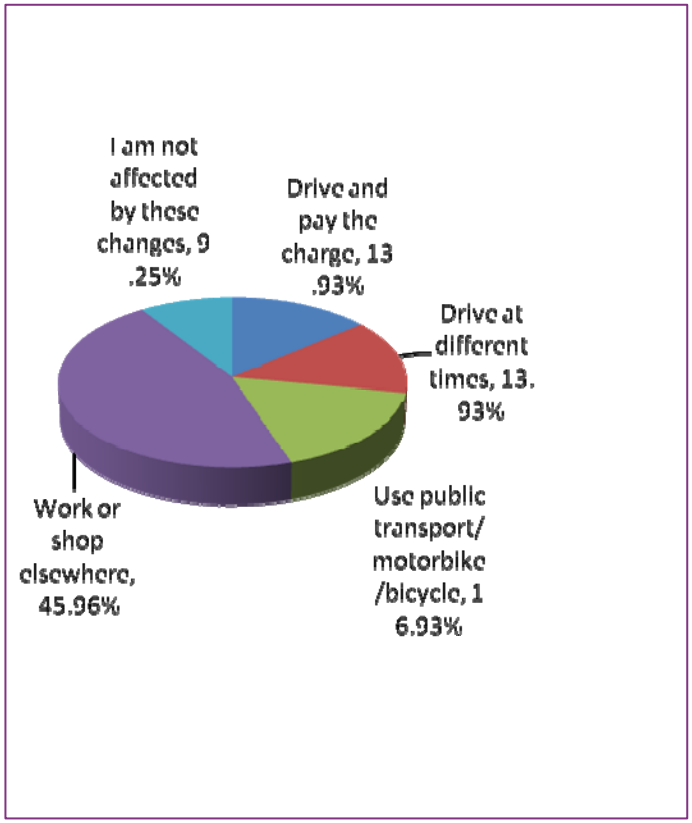


http://www.maptube.org/lookeast

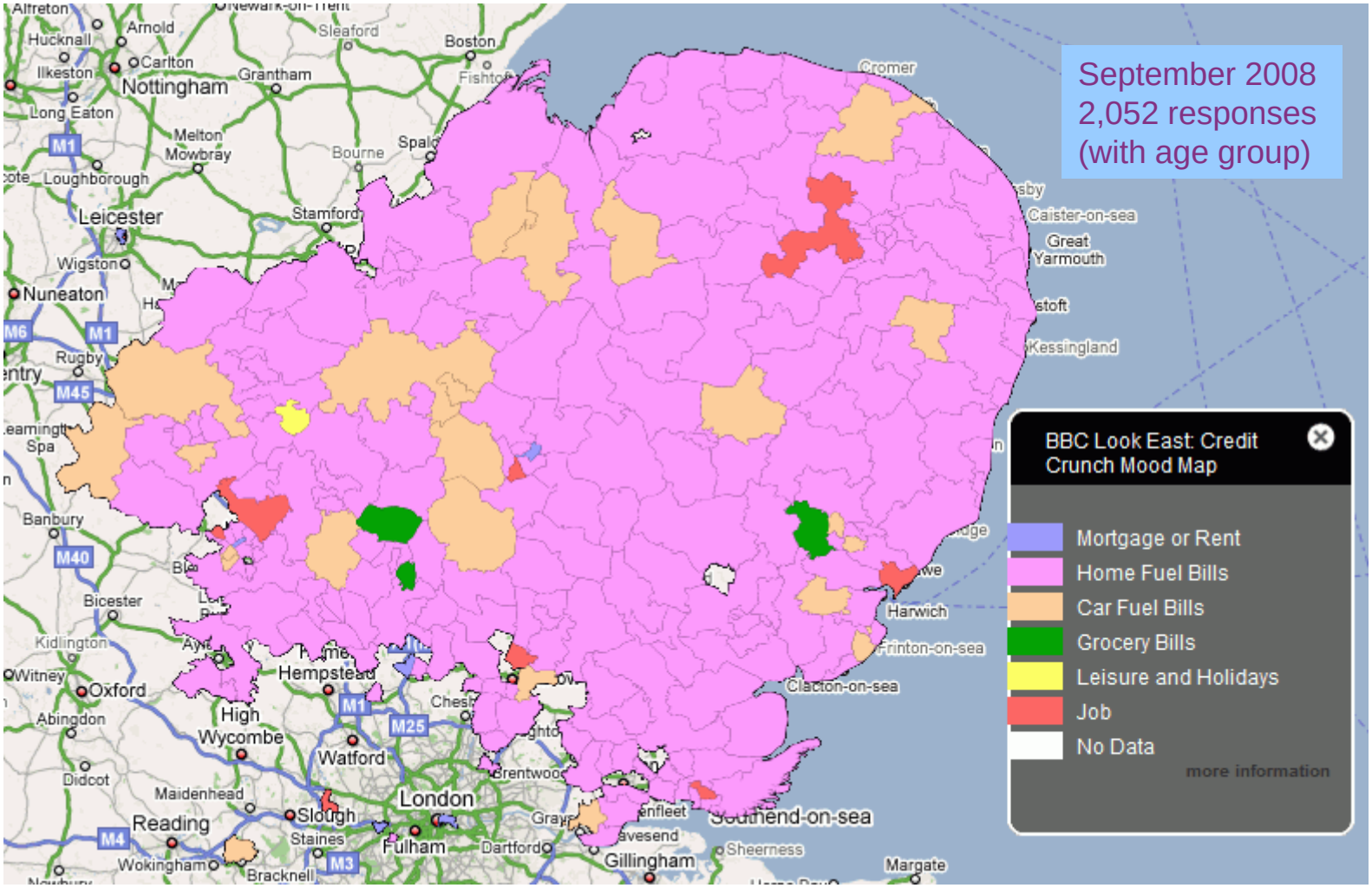
Manchester Congestion Charge



15,902 responses
October to December 2008

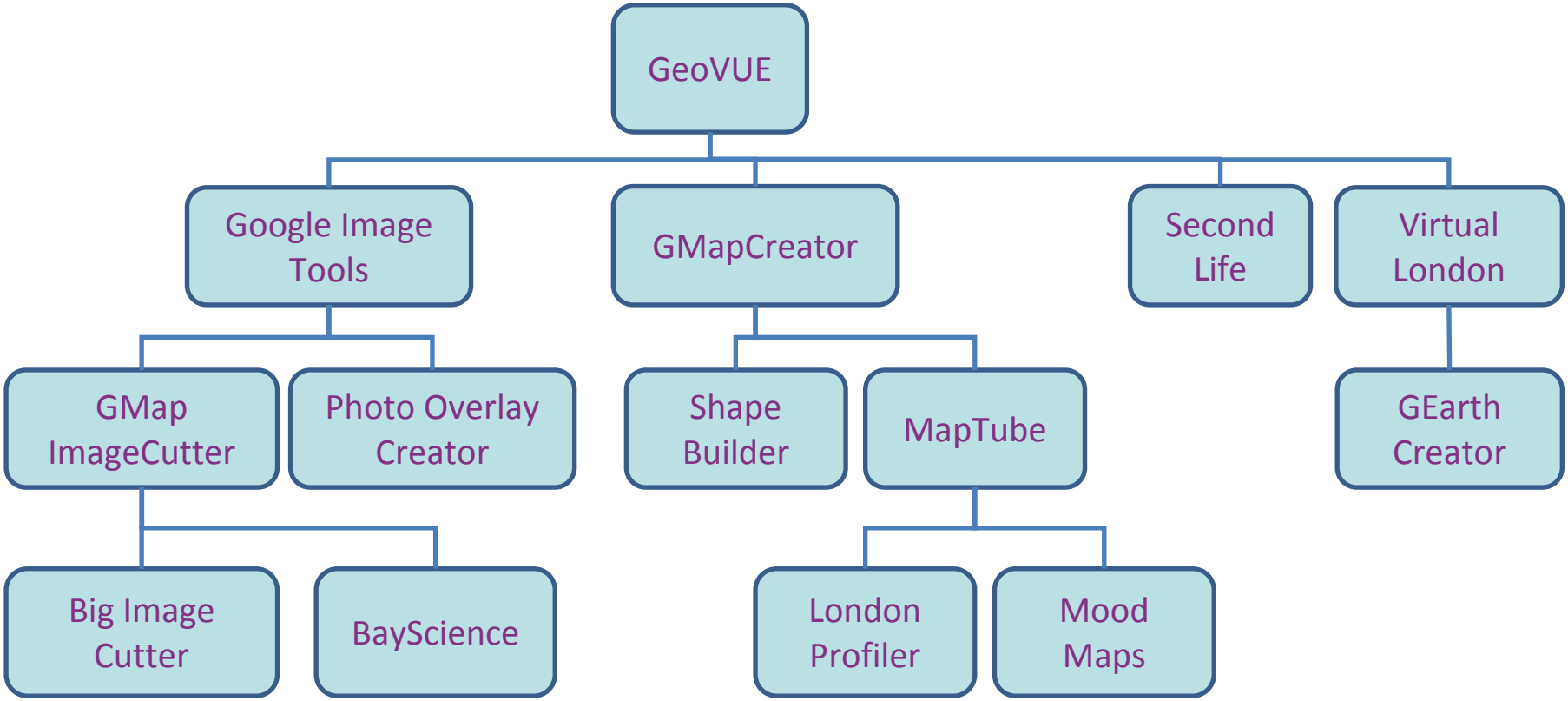


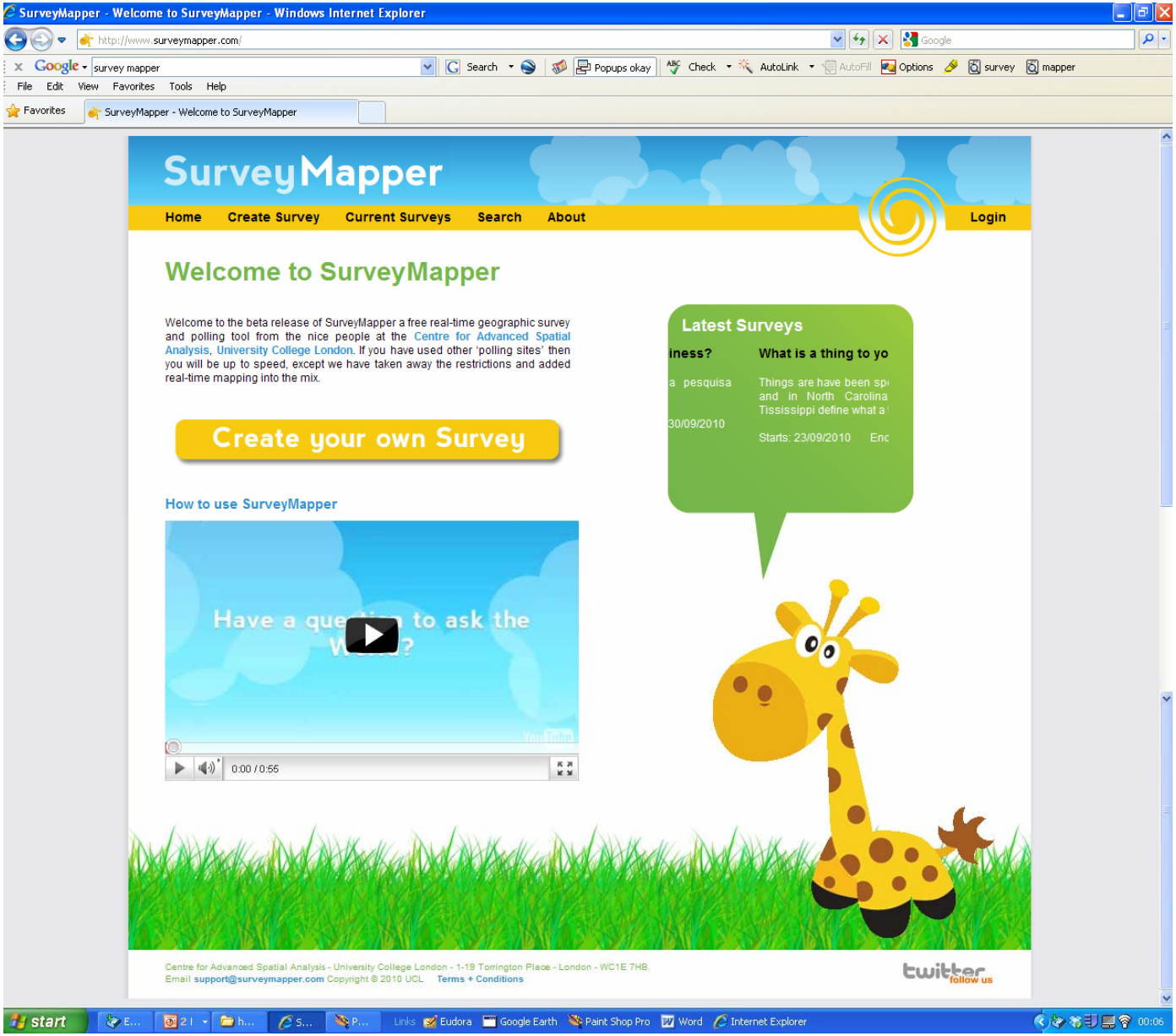
BBC Look East: Credit Crunch



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

GeoVUE Family Tree




SurveyMapper - Welcome to SurveyMapper - Windows Internet Explorer
http://www.surveymapper.com/
SurveyMapper
Home
Create Survey
Current Surveys
Search
About
Login
Welcome to SurveyMapper
Welcome to the beta release of SurveyMapper a free real-time geographic survey and polling tool from the nice people at the Centre for Advanced Spatial Analysis, University College London. If you have used other 'polling sites' then you will be up to speed, except we have taken away the restrictions and added real-time mapping into the mix.
Create your own Survey
How to use SurveyMapper
Latest Surveys
What is a thing to yo
Things are have been sp
and in North Carolina
Tississippi define what a
30/09/2010
Starts: 23/09/2010
Centre for Advanced Spatial Analysis - University College London - 1-19 Torrington Place - London - WC1E 7HB.
Email support@surveymapper.com Copyright © 2010 UCL Terms + Conditions
twitter
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Most Popular Live Surveys

CutsMap

There are a wide range of opinions about the "Cuts" that will be announced in the Comprehensive Spending Review. I want to discover whether there are any spatial or demographic patterns in the distribution of these opinions.
Started: 01/10/2010 Ends: 31/12/2010
89 views 47 responses

Safer Parks Survey

Making sure that our local parks are safe for everyone to use and enjoy is very important to us. Please take a few moments to tell us how you feel about your local park.
Started: 27/09/2010 Ends: 28/10/2010
58 views 17 responses

What is a thing to you?

Things are have been spotted in London and in North Carolina. Help us at Tissisippi define what a thing is.
Started: 23/09/2010 Ends: 31/12/2010
47 views 14 responses

Most Popular Surveys (All time)

How Happy Are You?

Are you happy or sad?
Started: 15/06/2010 Ends: 31/08/2010
562 views 264 responses

Public Perceptions of Crime - Beta Testing Survey

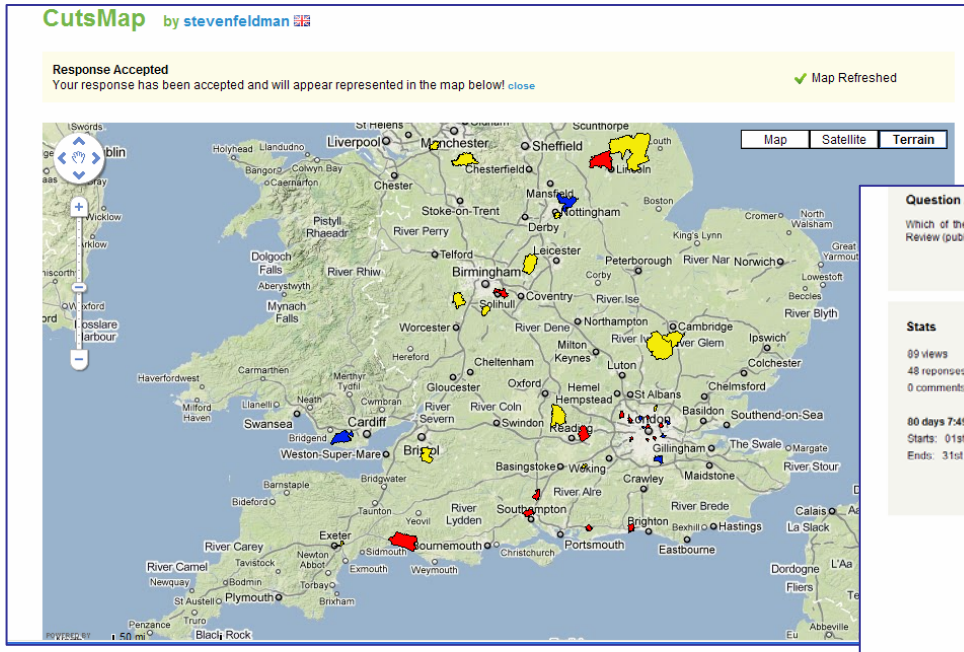
Survey to see perception of crime mapped to postcode
Started: 24/05/2010 Ends: 31/08/2010
533 views 3,106 responses

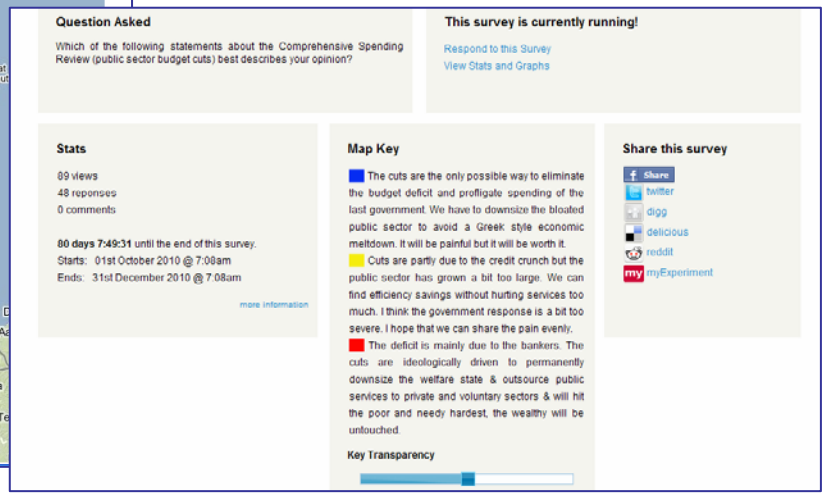
World Cup 2010

Who do you think is going to win the World Cup final?
Started: 08/07/2010 Ends: 11/07/2010
448 views 148 responses

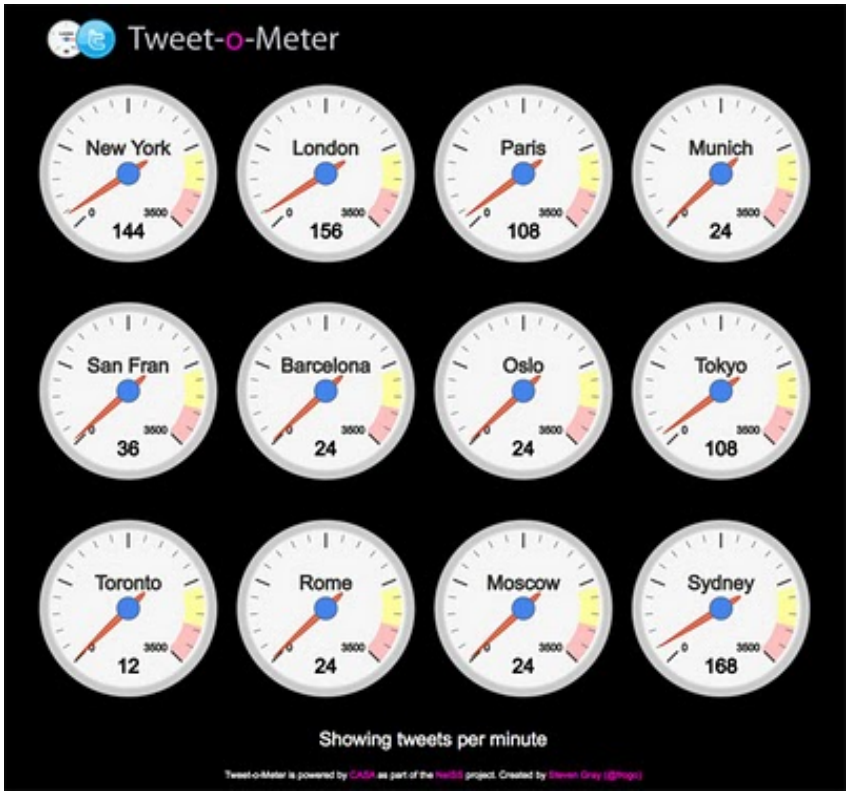
Top Ten GeoCodes

GeoCode	Responses	Percentage
TW11	3	6.25%
DY10	2	4.17%
DT6	1	2.08%
CV13	1	2.08%
CR6	1	2.08%
CF71	1	2.08%
CB22	1	2.08%
BT5	1	2.08%
BS39	1	2.08%
BN15	1	2.08%

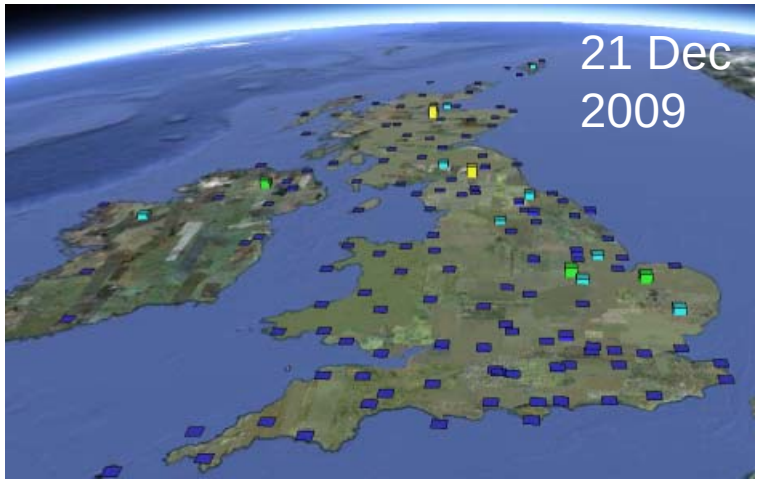


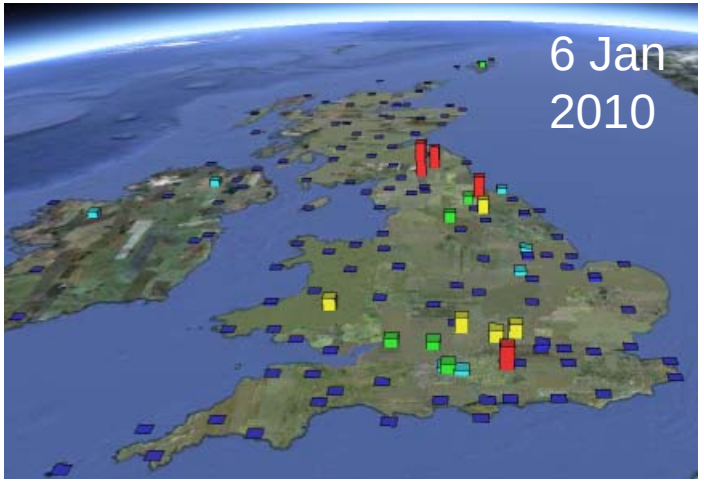


Online Feeds – Tweet-O-Meter and Mapping Short Messages

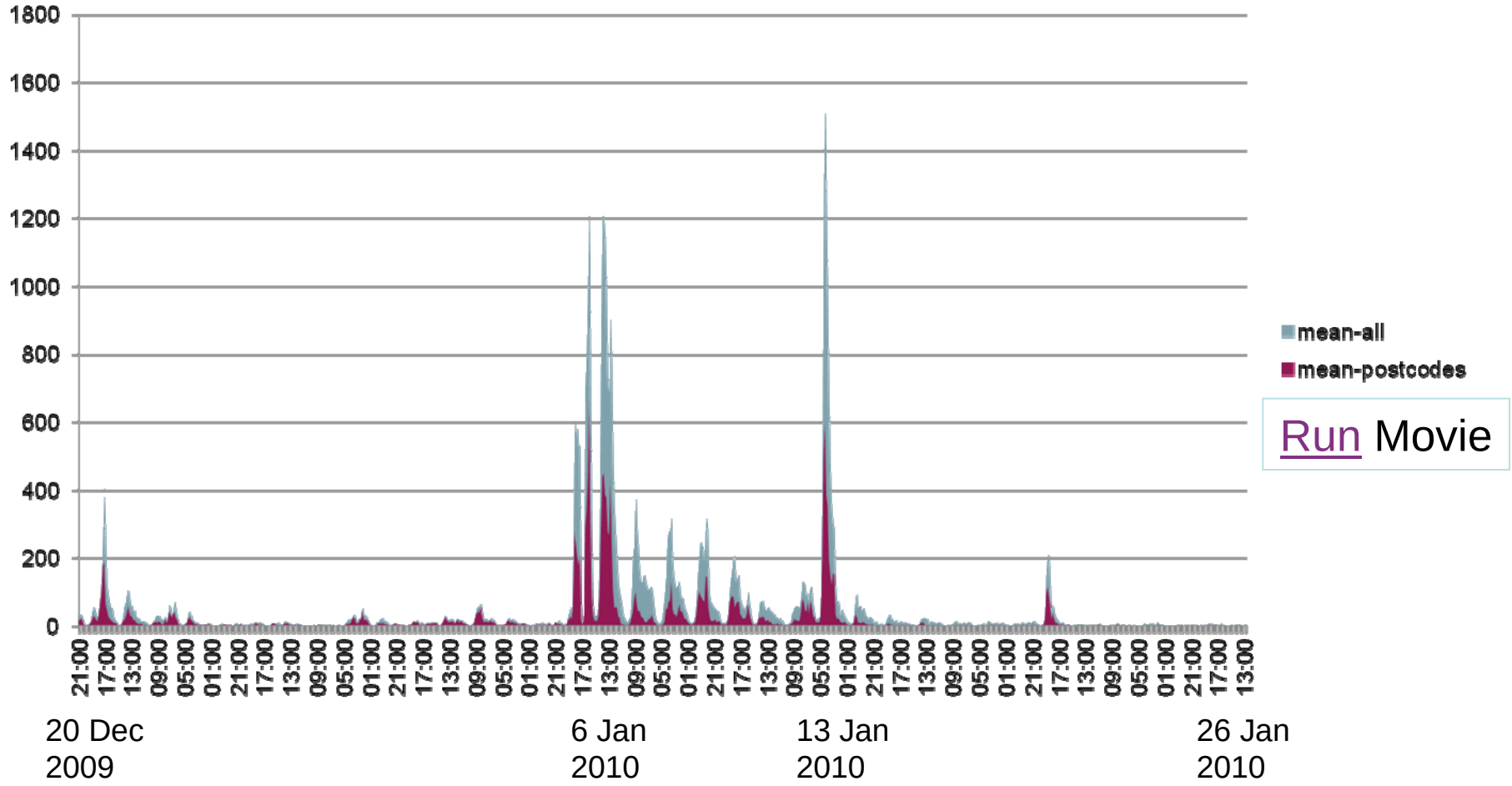


10953	Dratted cold snap has killed the car battery..Â£70 for a new one...#uksnow	21/12/2009 22:53	pablothehat (pablothehat)
5788	Steady heavy snow in Chesham HP5 #uksnow	21/12/2009 15:57	iotaMEDIA (Gordon O'Neill)
5789	#uksnow SG10 3/10	21/12/2009 15:57	domsparkes (domsparkes)



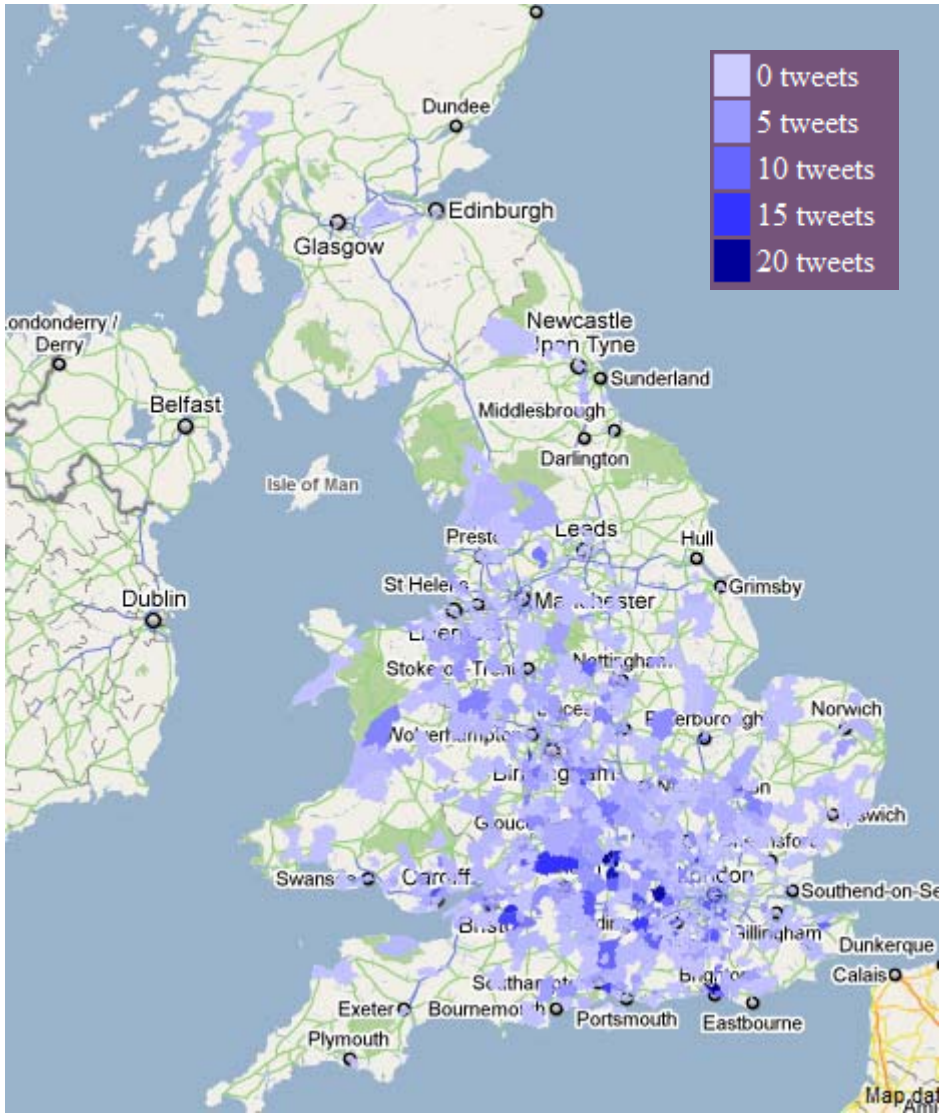


Tweets Per Hour (#uksnow)

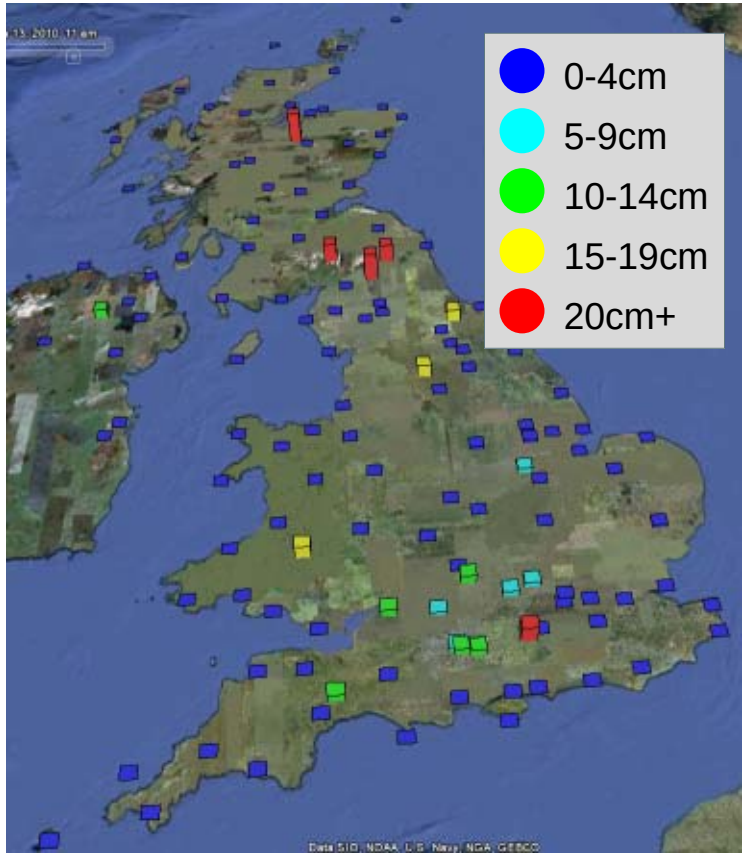


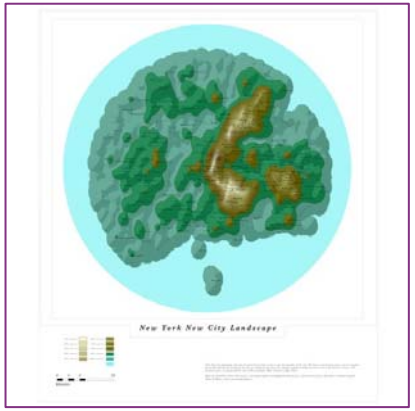
Tweets using the #uksnow tag shown as tweets (grey) and those containing a valid postcode (red)

#uksnow tweets: Wed 13 January 2010

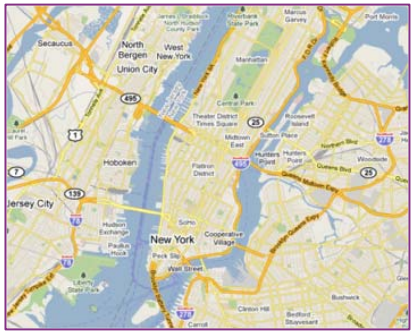


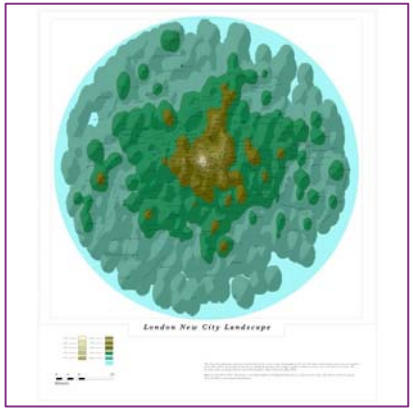
Tweets using the #uksnow tag for Wednesday 13th January 2010 plotted as a count by postcode for the whole day, compared to UKMO data for 12Z





New York





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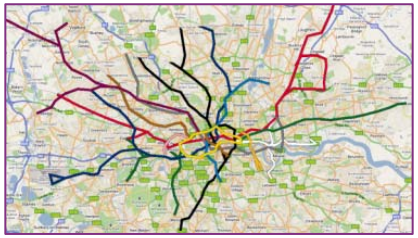

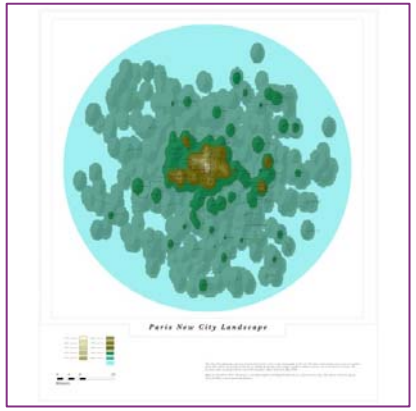

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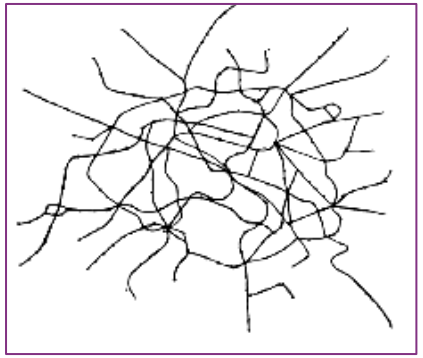

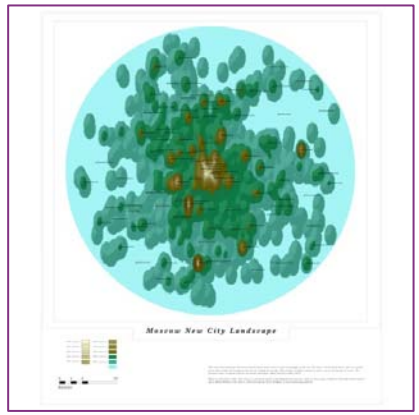

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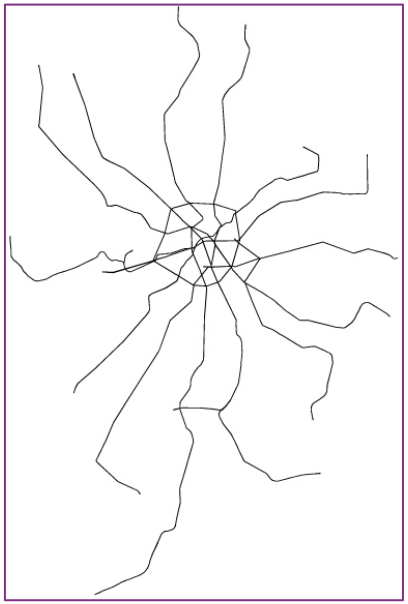

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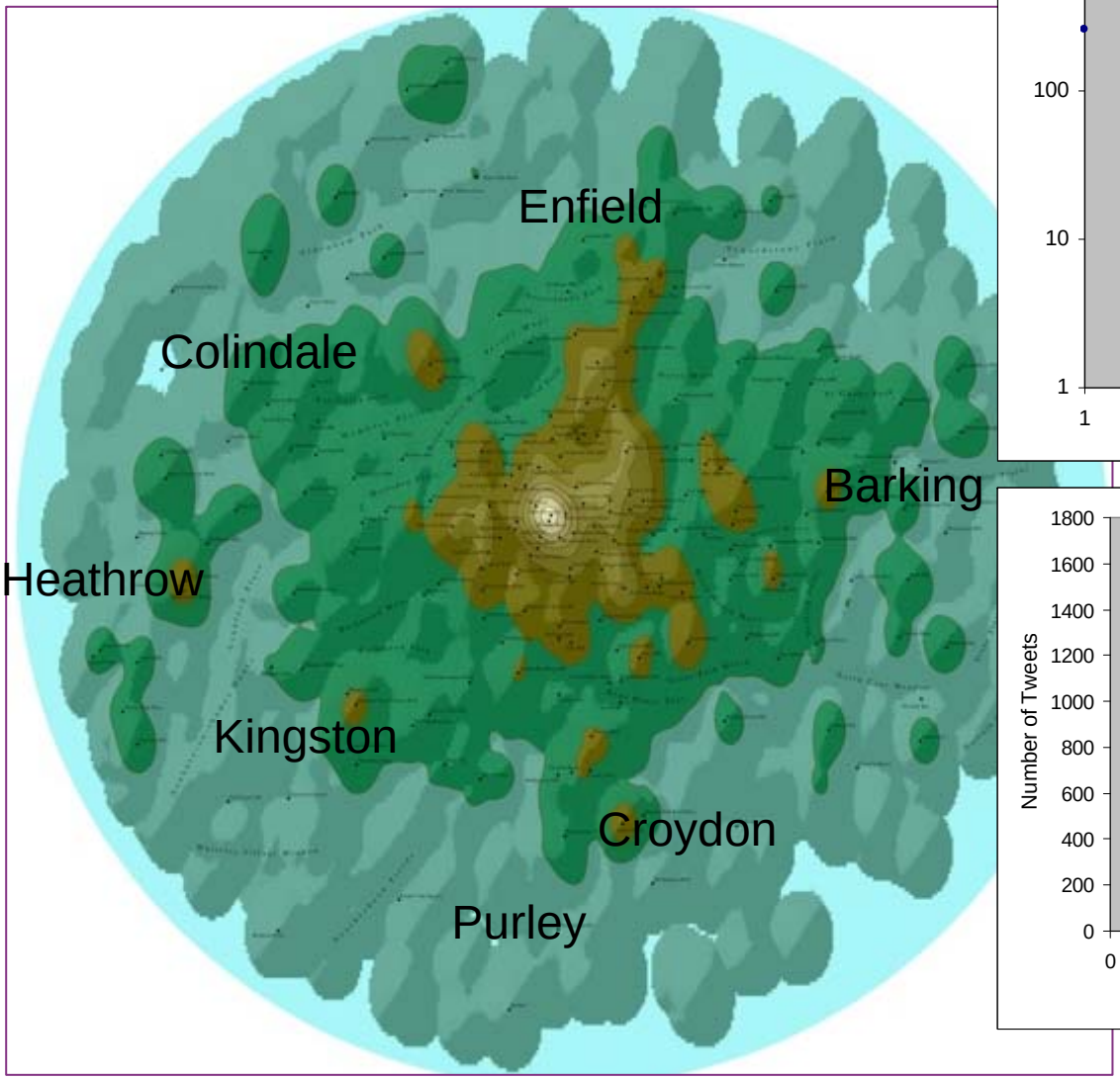
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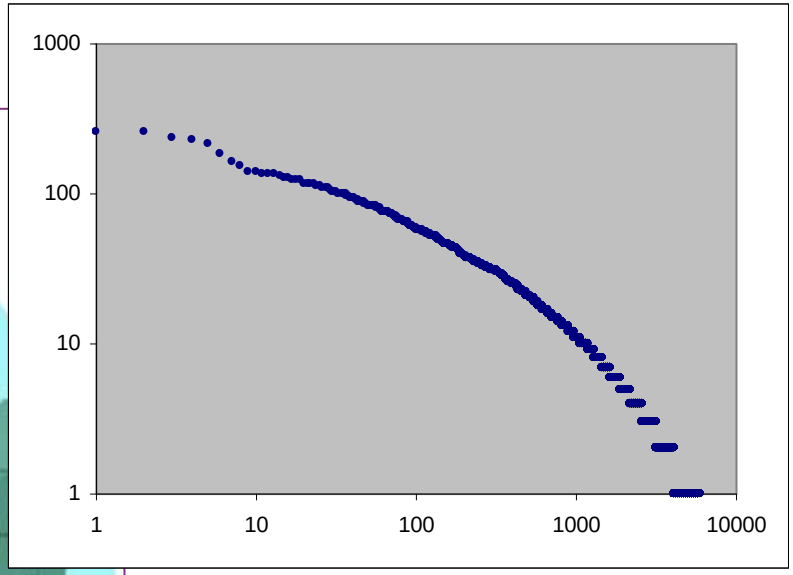
Kingston
Croydon
Purley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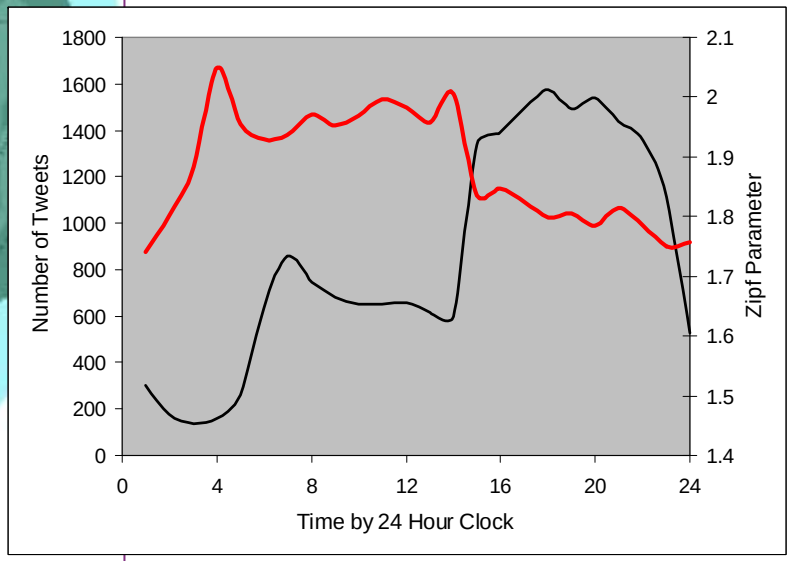
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2
1.9
1.8
1.7
1.6
1.5
1.4
Zipf Parameter
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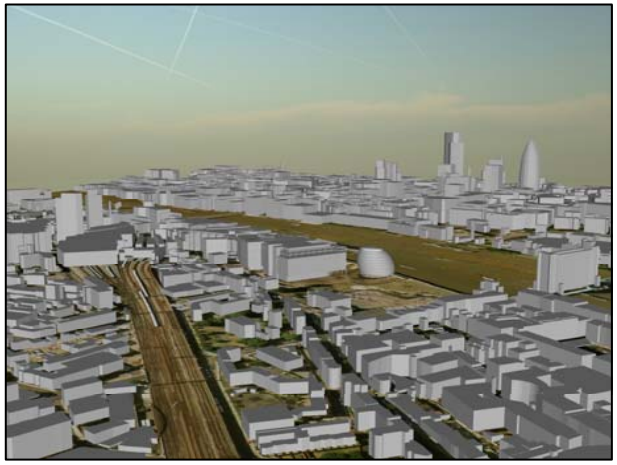
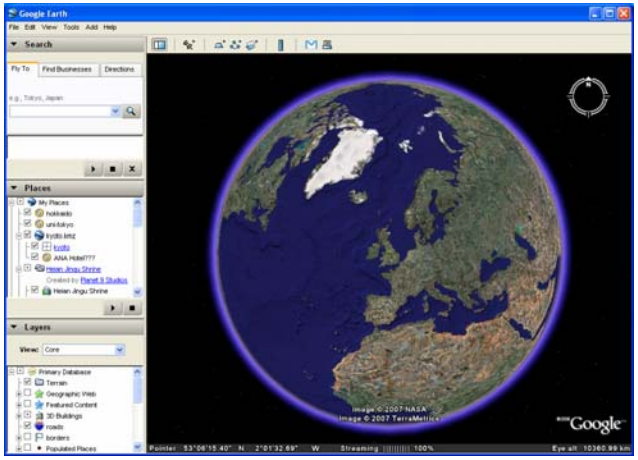
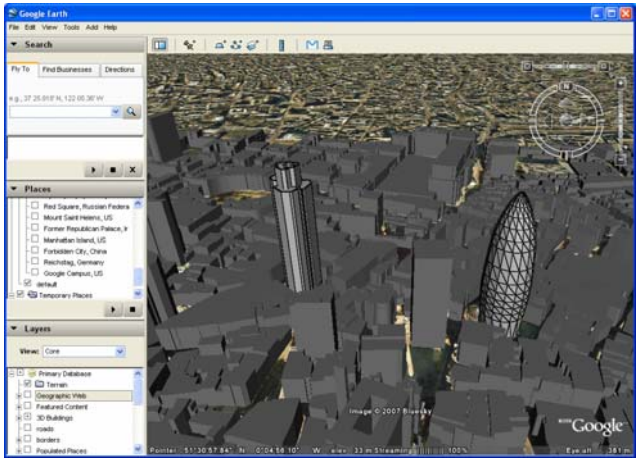
4
8
12
16
20
24
Time by 24 Hour Clock

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



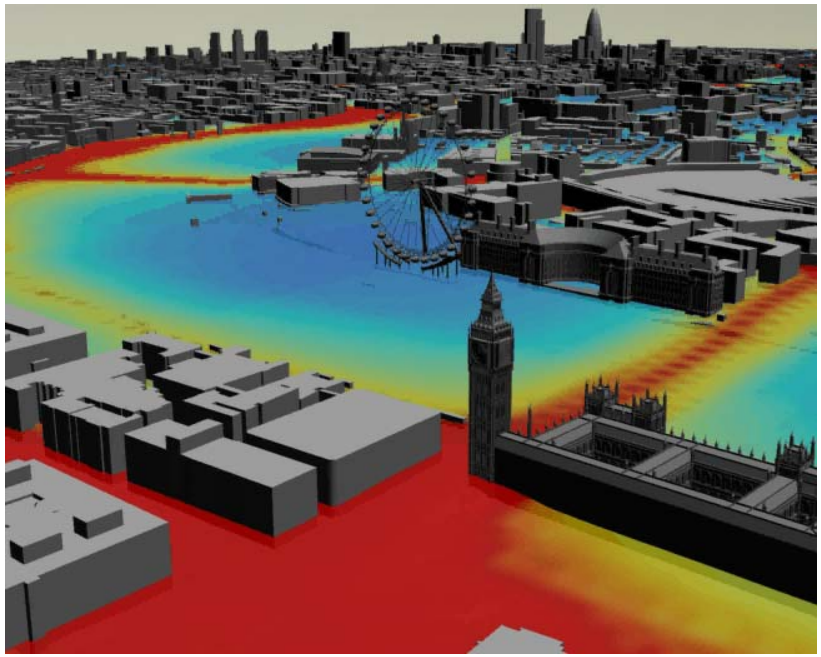


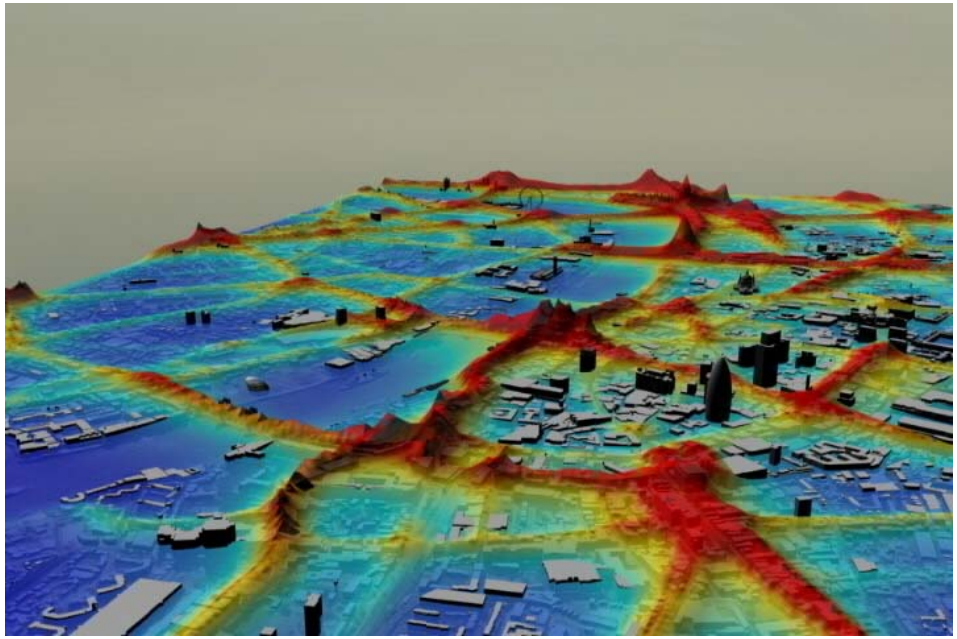


Maps in 3D are rather abstract and thus ***GEarthCreator*** is rather contrived –

True 3D exists at a finer scale and one of our workhorses to develop such data is our 3D block model of Greater London

This is built in ArcGIS, 3D Max etc. and is run in ***Google Earth***



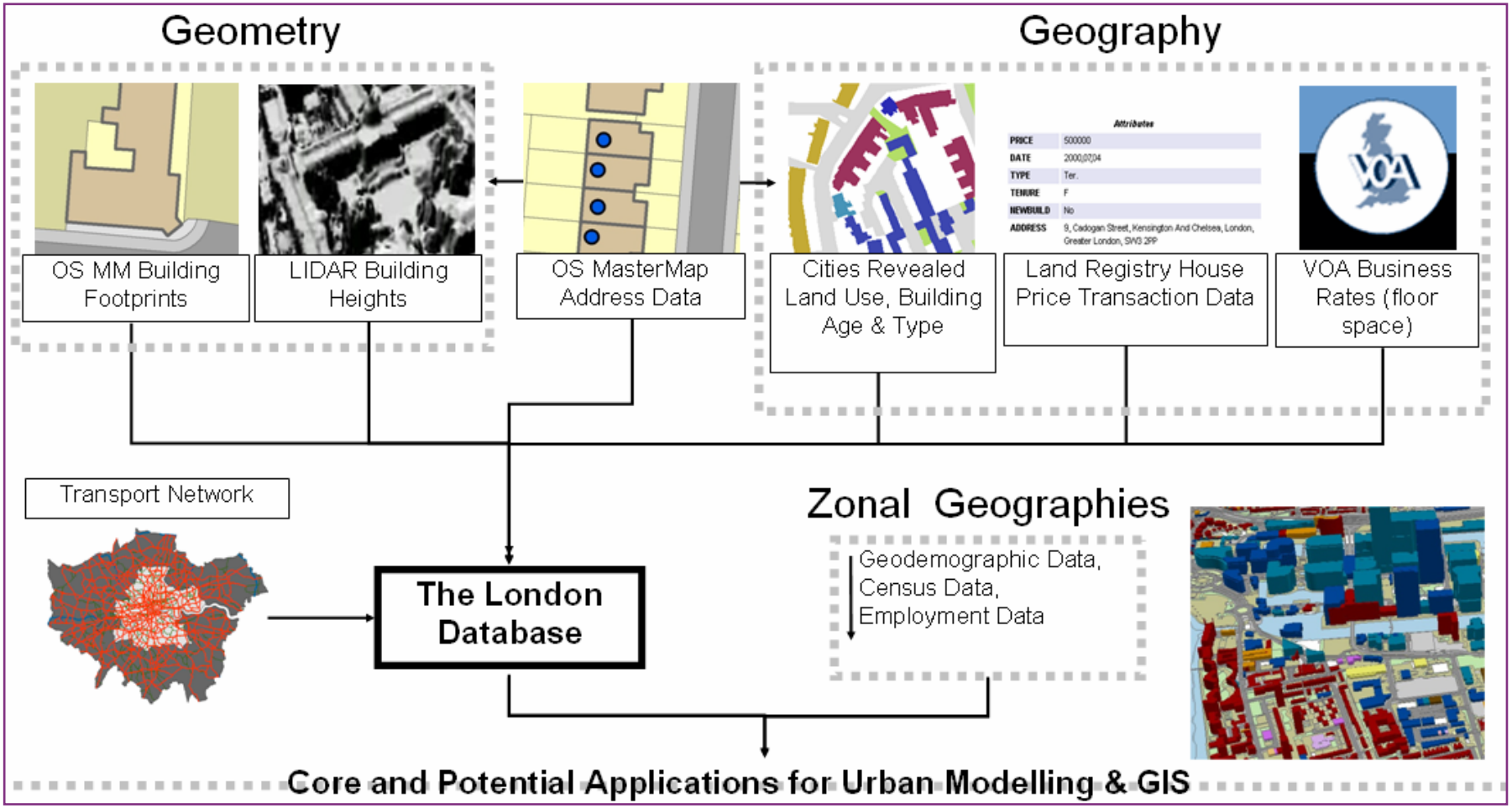


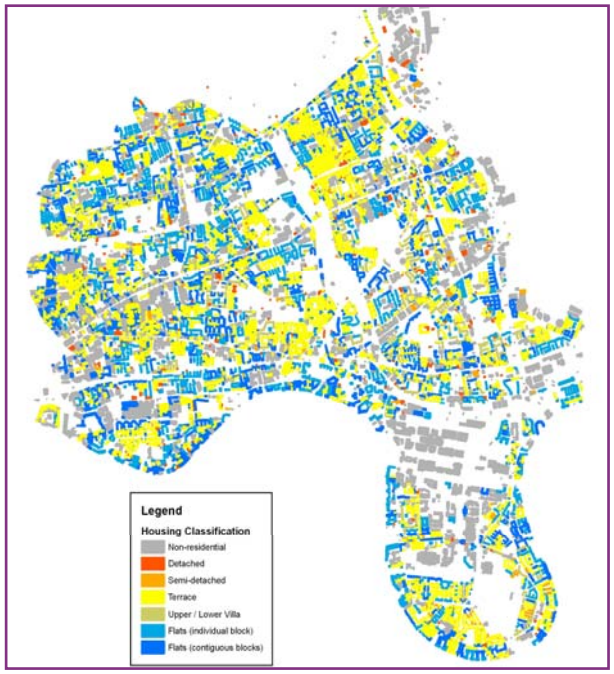
The key issue for us is to populate this data base of 3.6 million building blocks with socio-economic data

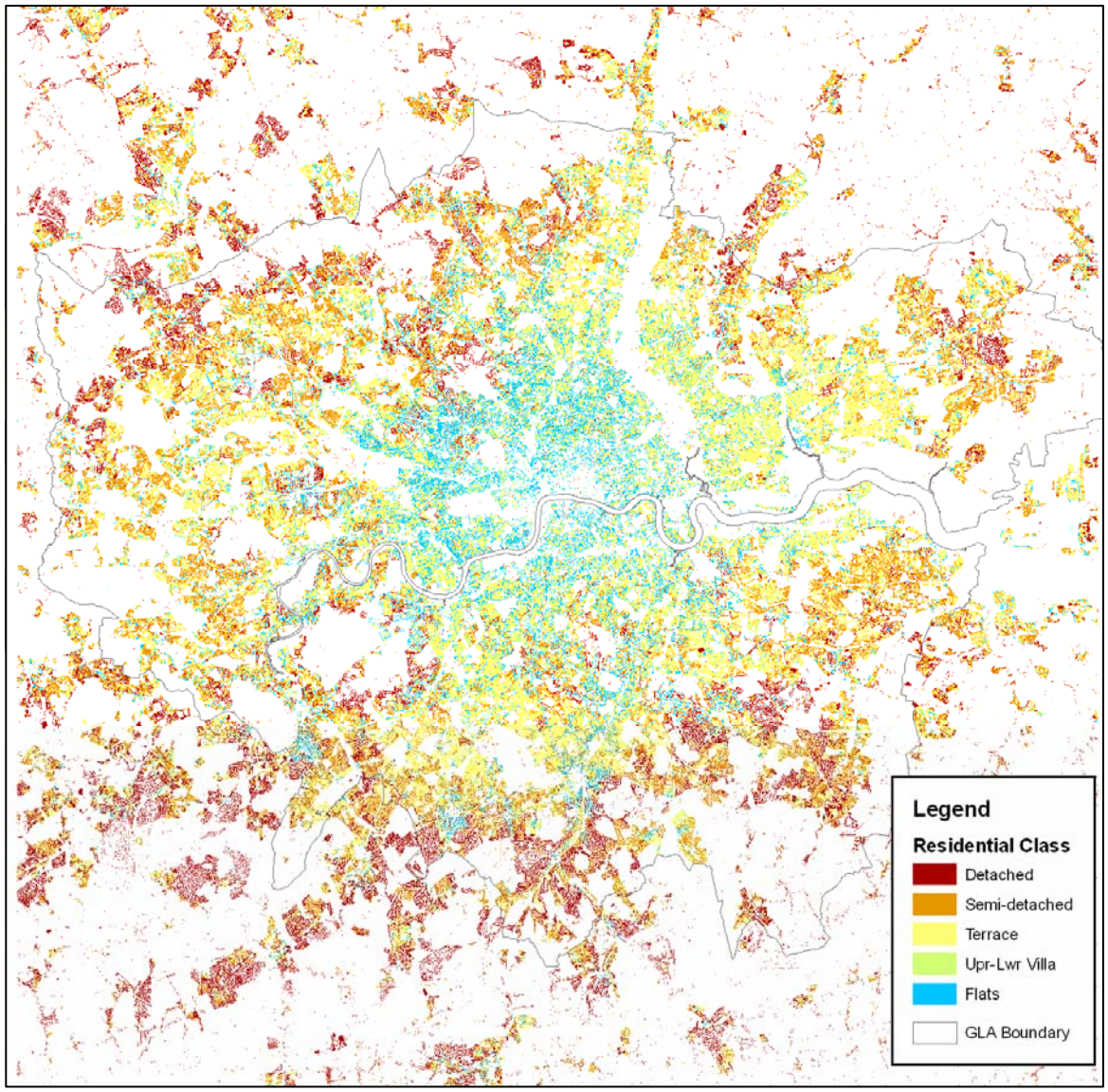
This is linking geometry to geography in a way that will explode the data base to levels much more reminiscent of large scale databases in the physical sciences than the rather modest social data bases based on aggregates of population

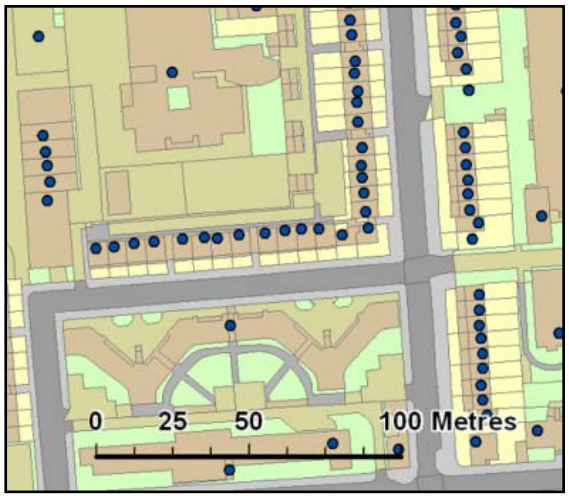
Linking these to individual address point data is another related issue too as well as tagging buildings to populations

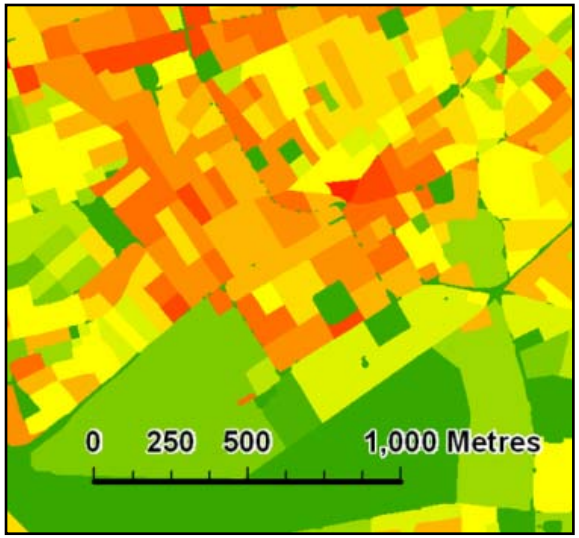
From geometry to geography and back – populating really large spatial data bases

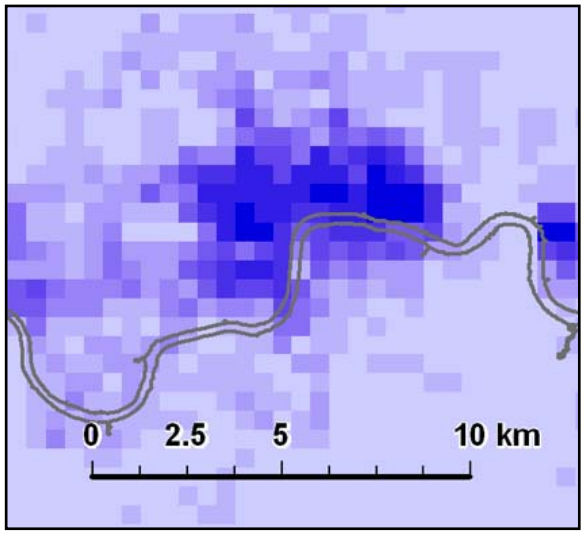



Legend
Housing Classification
Non-residential
Detached
Semi-detached
Terrace
Upper / Lower Villa
Flats (individual block)
Flats (contiguous blocks)

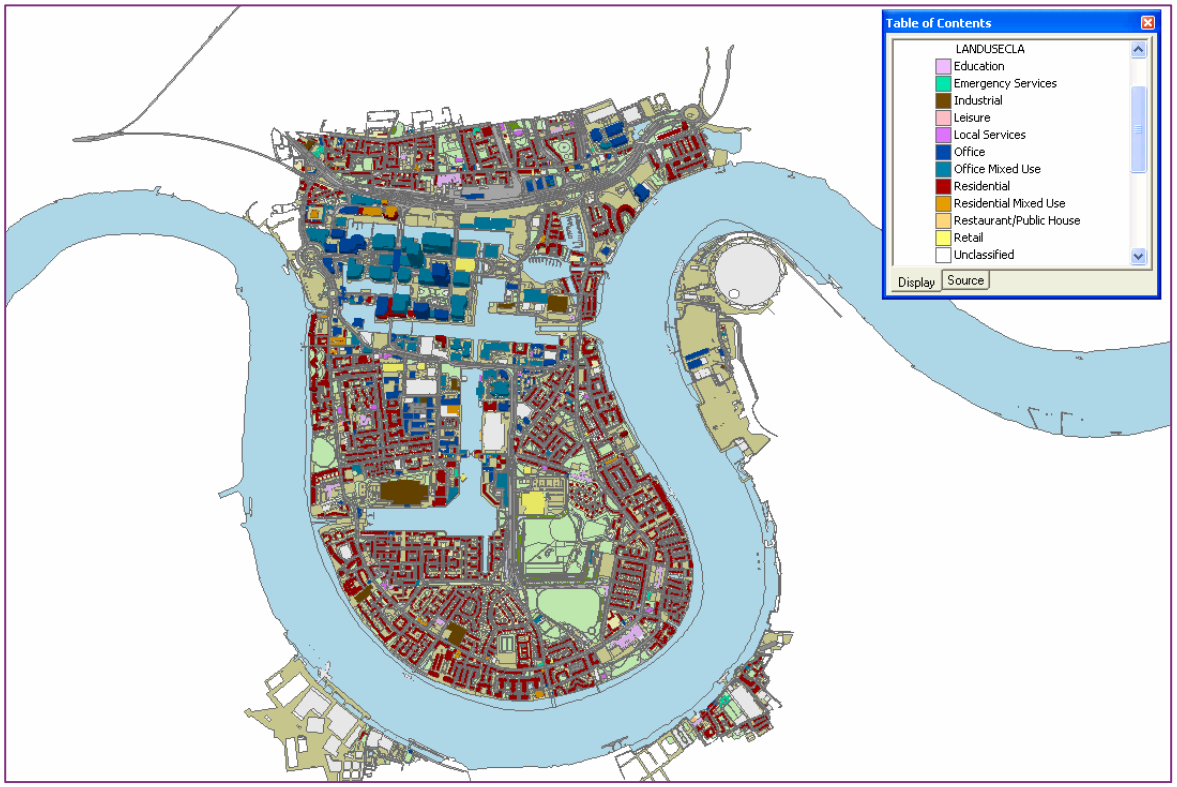

Legend
Residential Class
Detached
Semi-detached
Terrace
Upr-Lwr Villa
Flats
GLA Boundary







Adding Land Use, Transport and Populations and Aggregating Scales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Peckham
Greenwich
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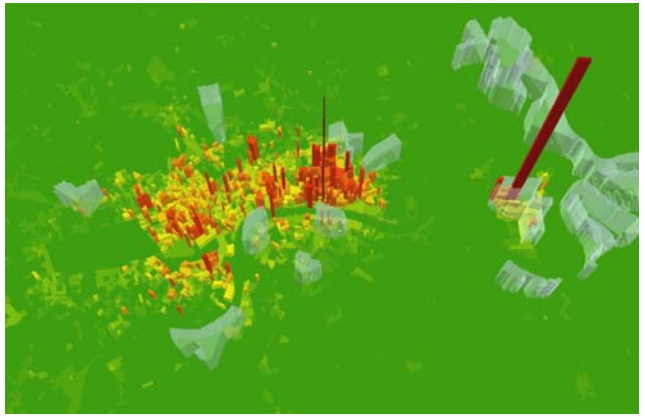
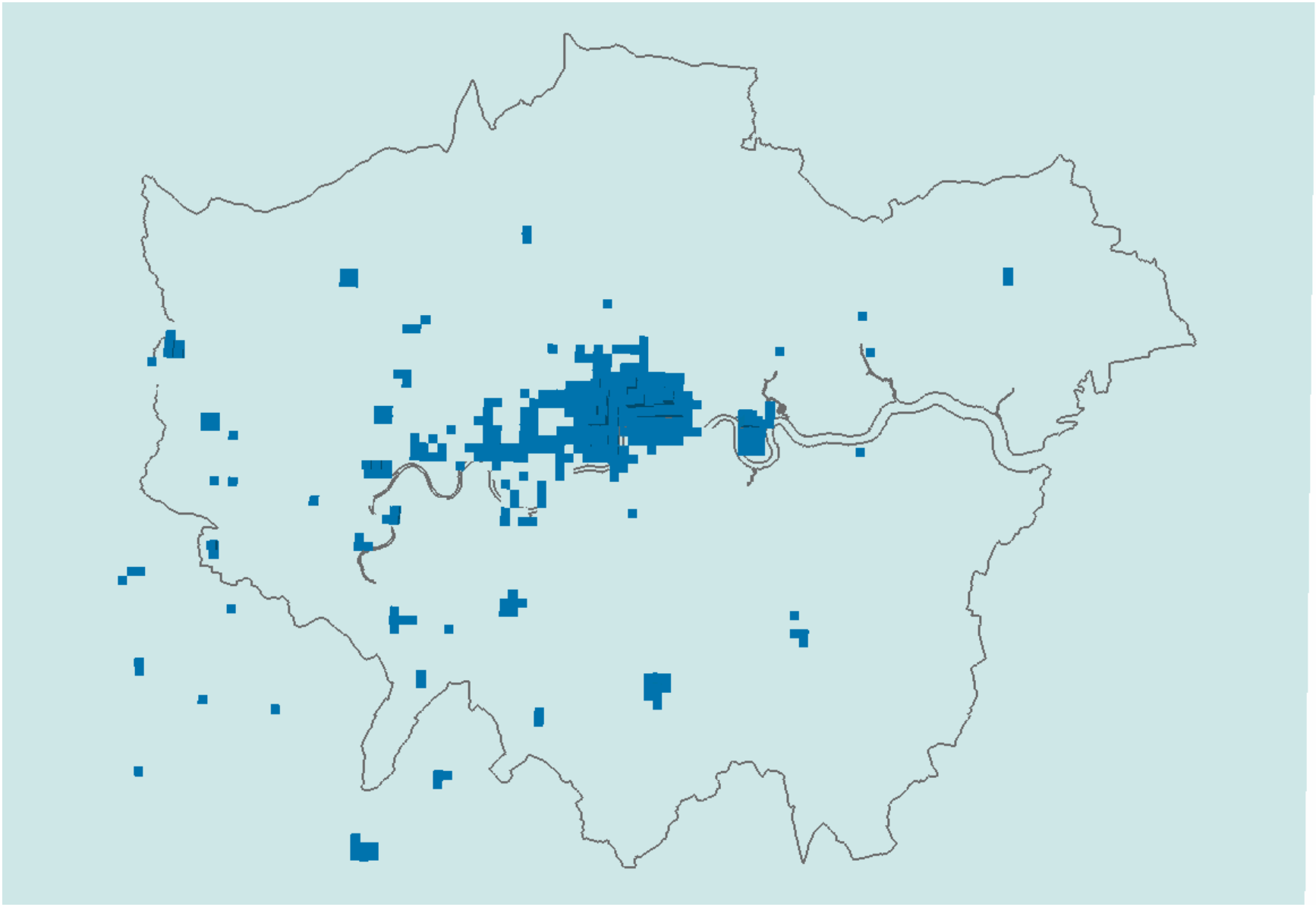
House Prices 2007





The future – disseminating spatial data in multimedia – games and virtual worlds

Thanks, Any Questions?

Look at our web sites

http://www.casa.ucl.ac.uk/

http://www.surveymapper.com/

http://www.maptube.org/

Our Blogs

http://www.digitalurban.blogspot.com/

http://gisagents.blogspot.com/

http://www.genesis.ncess.ac.uk/