

WEDNESDAY 20 FEBRUARY 2008 @ The Barbican

Visual Simulation:

**New Techniques for Modelling Geographical
Distributions in Space & Time**

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www.casa.ucl.ac.uk

DIGITAL GEOGRAPHY *in a* **WEB 2.0 WORLD**



A Warning

The movies can be downloaded and played within this pdf but this can be a hazardous task if your line is slow. Use your discretion. Each file is given with its size in MB.

This pdf will give a flavour of the presentation without downloading any of the movies

Outline

A Little Bit of History: The Beginnings of Visual Computing

Visualisation, Interaction and Communication

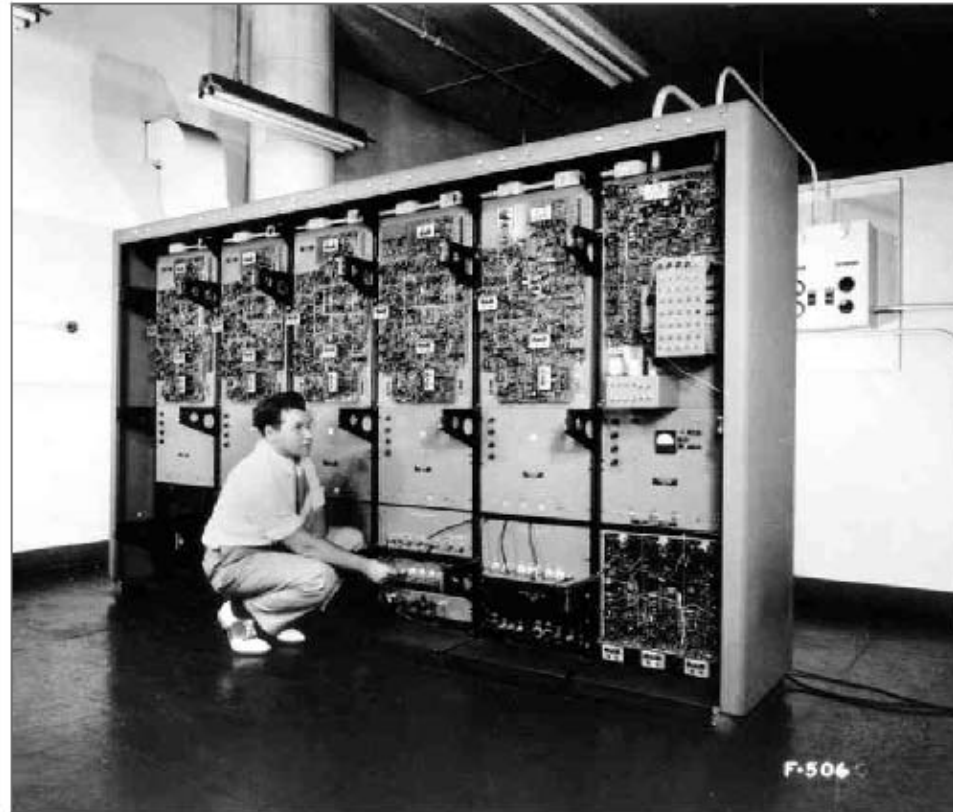
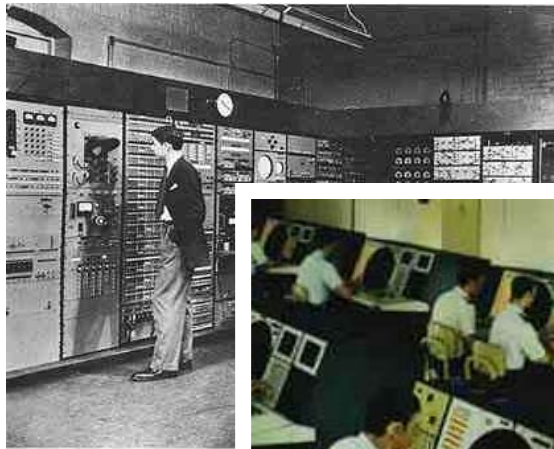
Three Examples:

- Symbolic Modelling: Land Use Transportation
- Iconic Modelling: Virtual London
- Representational Modelling: Fine Scale Motion

Next Steps: Web 2.0 Simulation

A Little Bit of History: The Beginnings of Visual Computing

Whirlwind at MIT



MIT Whirlwind

[close](#)

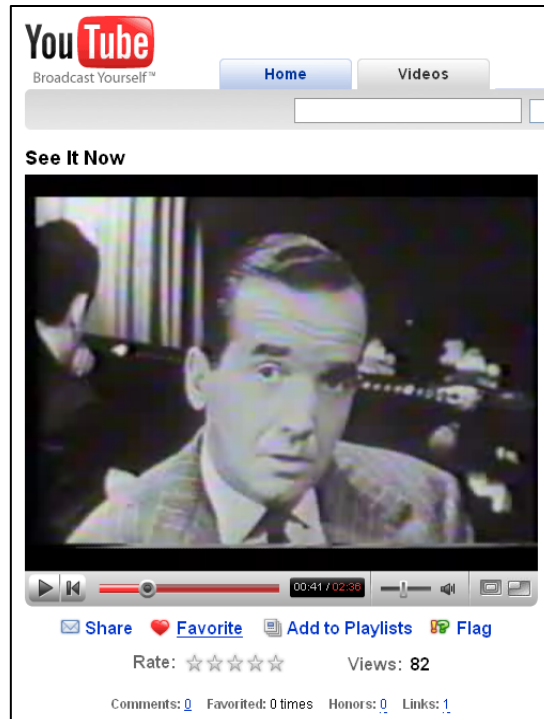
1951

- MIT's Whirlwind debuted on Edward R. Murrow's "See It Now" television series. Project director Jay Forrester described the computer as a "reliable operating system," running 35 hours a week at 90-percent utility using an electrostatic tube memory.

Start of 1945
project:

Completed: 1951

You Tube
Broadcast Yourself™



The screenshot shows the YouTube homepage with the 'Home' and 'Videos' tabs. Below the navigation bar, there is a search bar and a video player titled 'See It Now'. The video player shows a man in a suit speaking. Below the video player, there are social sharing options: 'Share', 'Favorite', 'Add to Playlists', and 'Flag'. The video has a rating of 5 stars and 82 views. At the bottom, it shows 'Comments: 0', 'Favorited: 0 times', 'Honors: 0', and 'Links: 1'.

YOU CAN LAUNCH THIS MOVIE FROM OUR WEB SITE IN THE PDF BY CLICKING ON – 20MB File
<http://www.casa.ucl.ac.uk/barbican/movies/See-It-Now.wmv>

VIDEOGRAPHY

DIGITAL GEOGRAPHY in a **WEB 2.0 WORLD**

NCESS

UCL

E·S·R·C
ECONOMIC
& SOCIAL
RESEARCH
COUNCIL

UNIVERSITY OF LEEDS

SPLINT
Spatial Literacy IN Teaching

The earliest computer movie I found in



Unfathomable Productions

*YOU CAN LAUNCH THIS MOVIE FROM OUR WEB SITE IN THE PDF BY
CLICKING ON – 29MB File*

<http://www.casa.ucl.ac.uk/barbican/movies/Kittie.wmv>

Enough of History although we ignore it at our peril

Onto

Visualisation, Interaction and Communication

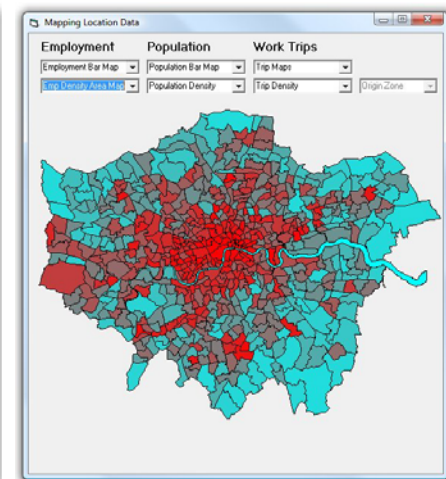
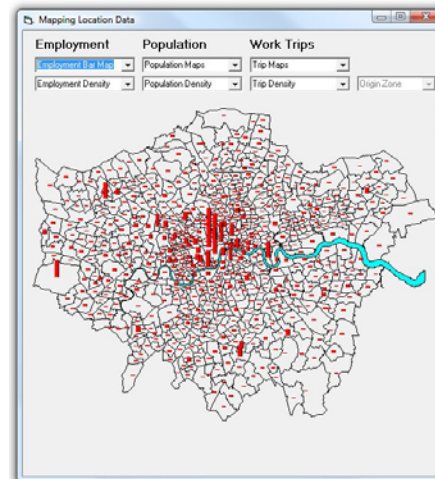
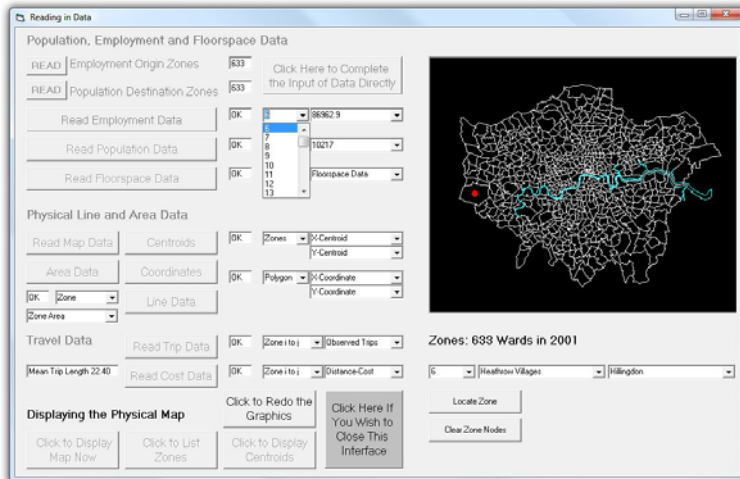
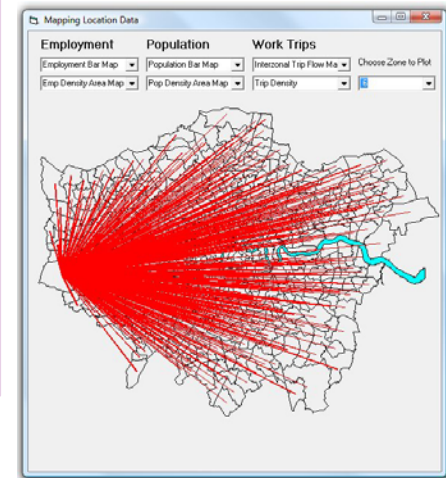
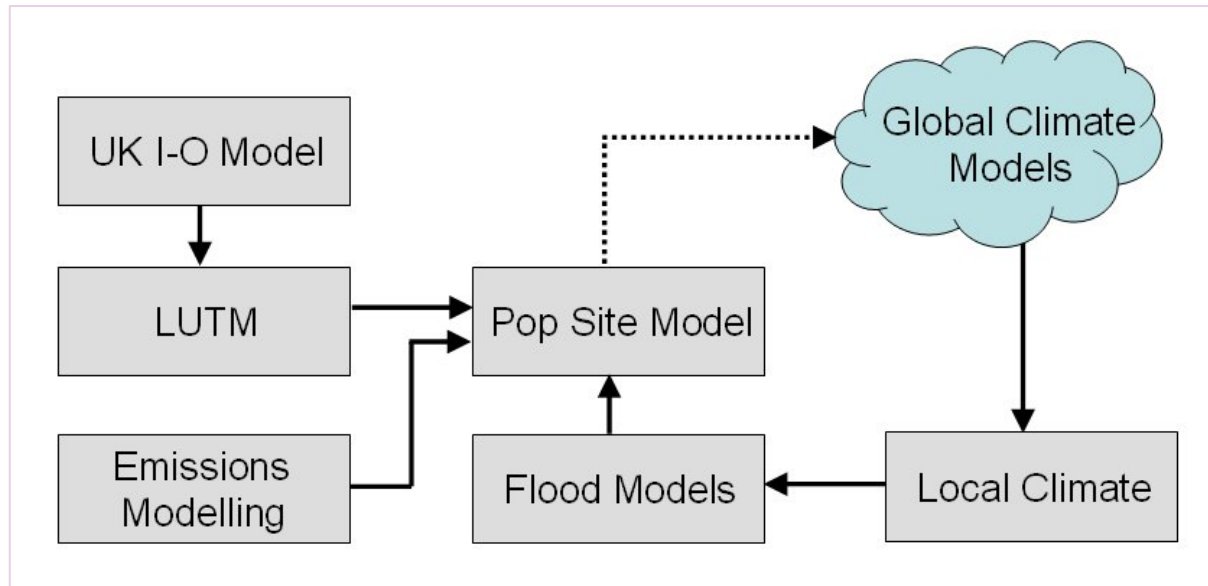
Despite the technology, the focus in computing
has become

- Interactive, spontaneous, immediate.
- visual, iconic, participative.
- communicative, remote, networked

My first example: how do we model the city symbolically, mathematically.

Let me explain what we are doing about simulating the impact of climate change on London as part of the Tyndall Centre's research on cities.

We are building a land use transport model as part of a process of integrated assessment. The key issue is that the model is interactive, immediate, visual and communicates ideas to other professionals involved in the process.



Let me show you how all this works. The great thing about what we are saying is we can demo it. However you can't do this in the pdf

London and the Thames Gateway Land Use Transportation Model

Cities Research Programme
Tyndall Centre
for Climate Change Research

CASA@UCL **Newcastle** **e9**

This program is a rudimentary land-use transportation model built along classical lines which allocates population and employment to small zones of the urban system. It uses spatial interaction principles which bind the population sector (residential or housing) to employment sector (work or industrial and commercial) through the journey to work (work trips) and the demand from services (which loosely translate into trips made to the retail and commercial sector).

The model is being built for Greater London and the Thames Gateway at ward level - 633 in all - so that it can be used in a wider process of integrated assessment focussed on assessing the impact of climate change on small areas in this metropolitan region. In particular rises in sea level and pollution are key issues, and as such the model sits between aggregate assessments of environmental changes associated with global and regional climate change models and environmental input output models, and much more disaggregate models related to the detailed hydrological implication of long term climate change.

The programme enables the user to read in the data and explore it spatially, to calibrate the parameters of the model and explore its outputs spatially and to engage in various predictions ranging from the typical 'business as usual scenarios' to much more radical changes posed limits on spatial behaviour which either result from climate change and/or mandated by government. The predictions and scenarios are intended to go out to 2100 and thus the model is largely designed as a sketch planning tool.

These various stages of the model contained in a master tool bar which is activated when the GO! button is pressed on this screen. The master tool bar enables the users to proceed through the various stages indicated and to display outputs in map and statistical form at any stage.

with **GLAECONOMICS LONDON** **GO!** Program Manual

My second example: how do we model the city iconically, visually.

Our Virtual London model is a 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.

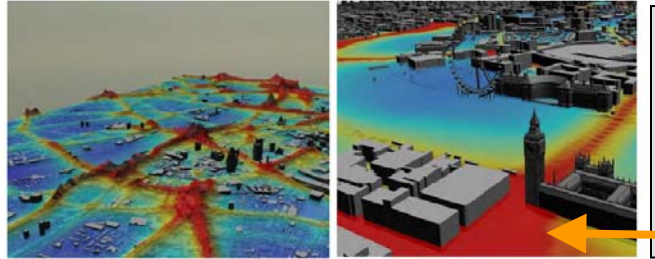
We use it as our test bed for multimedia. Andy will tell you about where we are going with this as it is our work horse for the GeoVUE project.



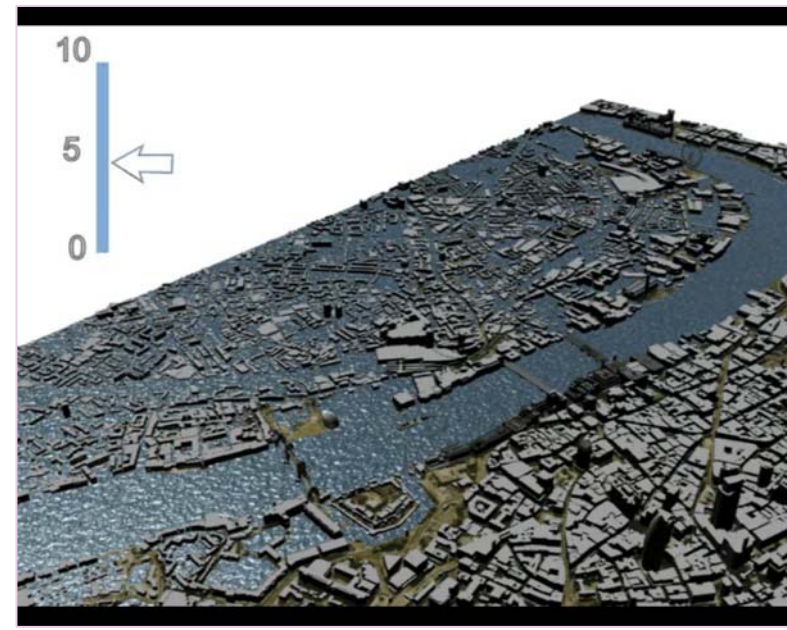
*YOU CAN LAUNCH THIS MOVIE FROM OUR WEB SITE IN THE
PDF BY CLICKING ON – 47MB File*

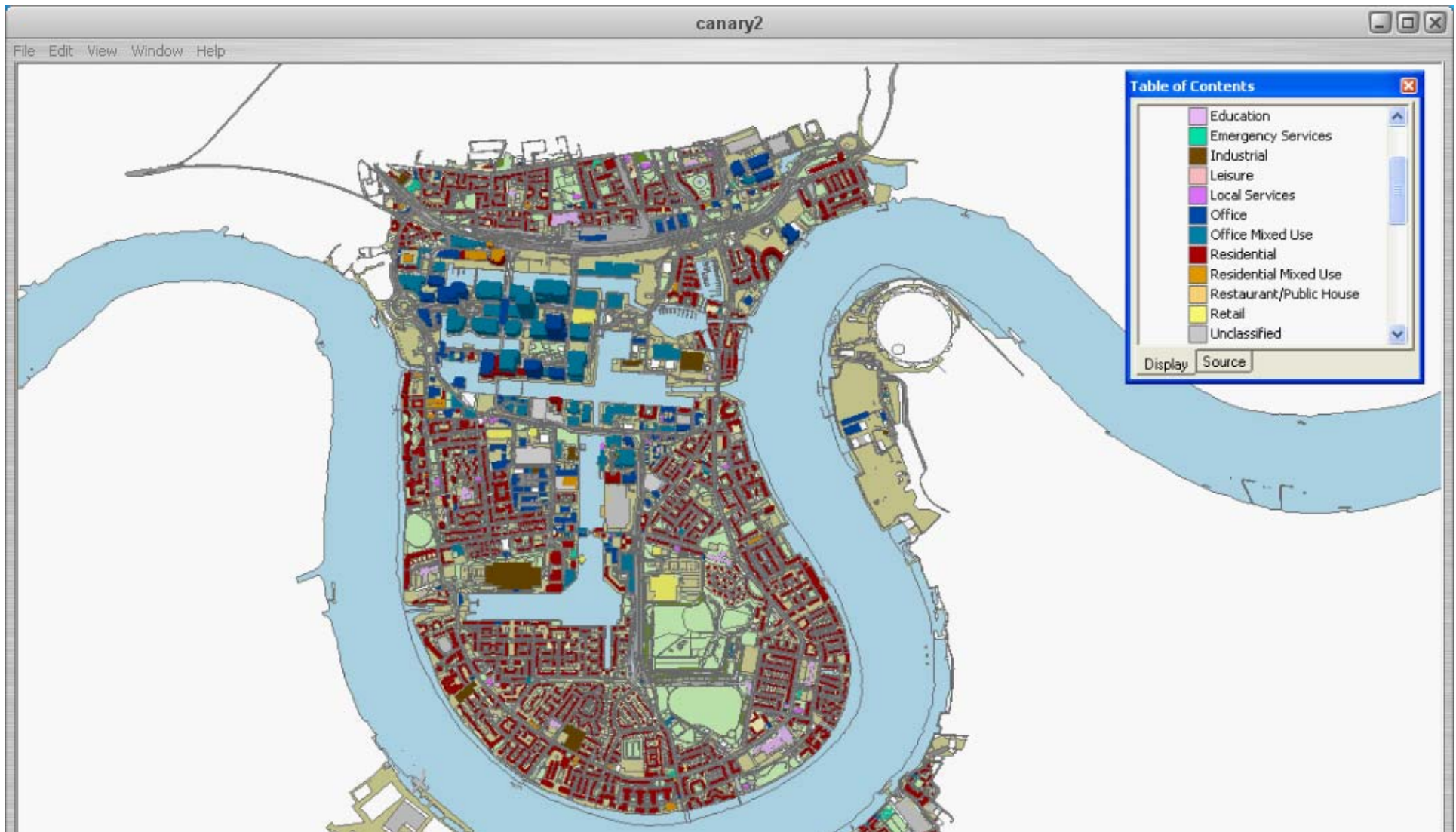
<http://www.casa.ucl.ac.uk/barbican/movies/GoogleEarth.wmv>

What can we do with the model, flood it,
visualise land use, simulate pollution, test the impact of
high buildings on the skyline



YOU CAN LAUNCH THIS MOVIE FROM OUR WEB SITE IN THE PDF BY CLICKING ON – 139MB File
 Probably too big to load so beware
<http://www.casa.ucl.ac.uk/barbican/movies/AirPollution.wmv>





YOU CAN LAUNCH THIS MOVIE FROM OUR WEB SITE IN THE PDF BY CLICKING ON – 12MB
<http://www.casa.ucl.ac.uk/barbican/movies/Canary-Wharf.wmv>

My third example: representational – how to present all of this, in Google

Our EPSRC CAPABLE project involves us in representing and modelling movements at the small scale, pedestrian movements, children walking to school, and using energy.


The project is about communicating these ideas to ourselves and to the wider constituency that is involved in these issues – walkability, obesity, safety.

But this will lead us to the next talk

I have backups as the network here runs slow but let me try to show you these examples from our web site, first www.casa.ucl.ac.uk

But in case I can't...

Unregistered HyperCam 2



The screenshot displays a satellite map interface. On the left, there are navigation controls including arrows and a zoom slider. The main map area shows a residential area with a path overlaid in colors: blue, cyan, yellow, and red. A red location pin is placed on the path. In the top right of the map area, there are 'Map' and 'Satellite' buttons. A small inset map in the bottom right shows the current location on a larger scale. Below the map is a line graph showing activity levels over time, with a vertical red line at the 4.0 mark. To the right of the map is a control panel with the following sections:

- Active Calories**: A legend with four color-coded boxes: blue for 'Very light activity', cyan for 'Light activity', yellow for 'Moderate activity', and red for 'Vigorous activity'.
- Activity**: A section with 'Type: Dog walking'.
- Animation**: A section with 'Time: 2005-11-03T16:17:20Z', three buttons (red left arrow, red square, green right arrow), 'Speed: Medium', and a dropdown menu.
- A text box containing the instruction: 'The buttons above control the animation.'

YOU CAN LAUNCH THIS MOVIE FROM OUR WEB SITE IN THE PDF BY CLICKING ON – 9MB File

<http://www.casa.ucl.ac.uk/barbican/movies/Walking-the-Dog.wmv>

Map Satellite

YOU CAN LAUNCH THIS MOVIE FROM OUR WEB SITE IN THE PDF BY CLICKING ON – 13MB File

<http://www.casa.ucl.ac.uk/barbican/movies/Footy.wmv>

Active Calories

- Very light activity
- Light activity
- Moderate activity
- Vigorous activity

Activity

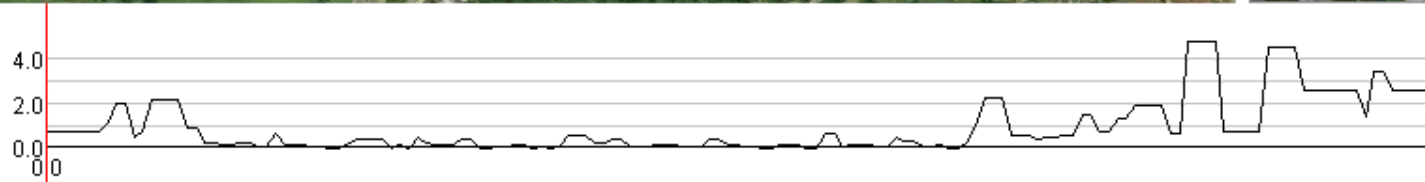
Type: Football

Animation

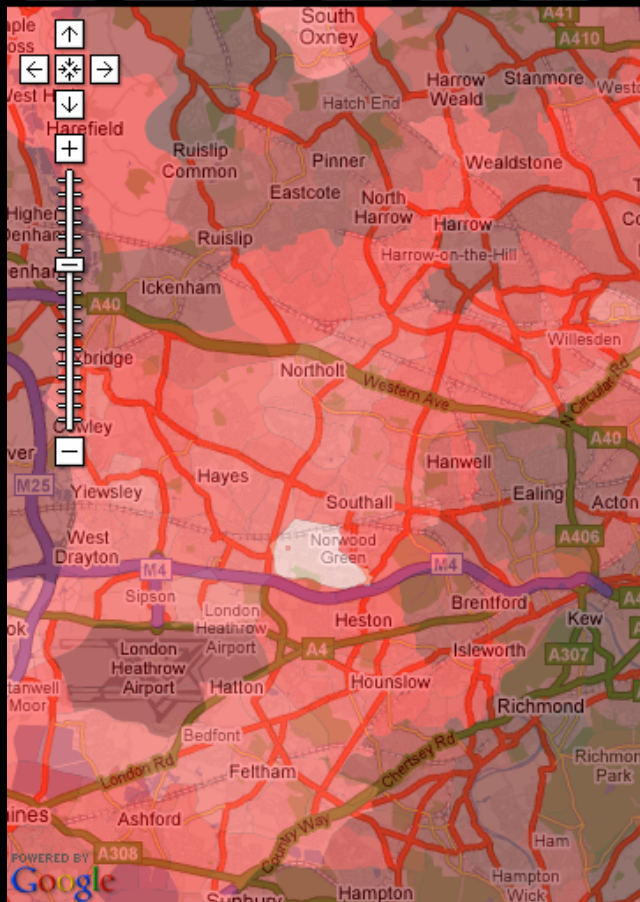
Time: 2005-11-05T09:34:06Z

Speed: Medium

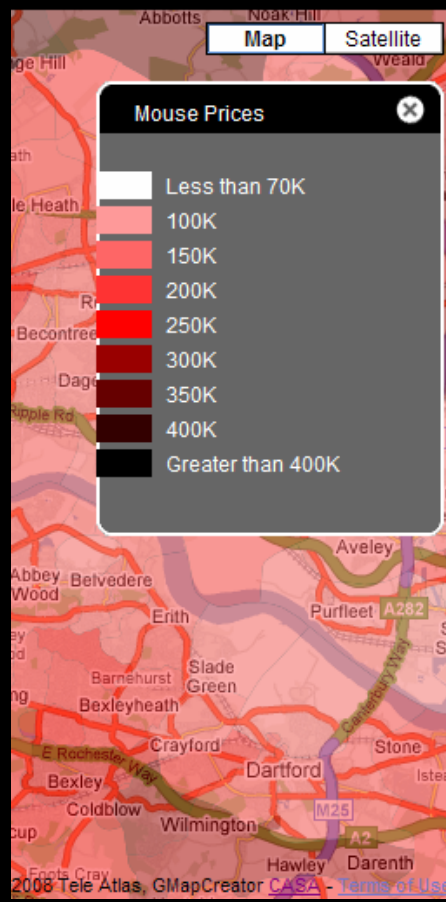
The buttons above control the animation.



Enough of me and onto the real stuff...how do we do this stuff, how do we present and communicate it to ourselves and others.



MAPTUBE a place to put maps



MAPTUBE a place to put maps



www.maptube.org

Popular Maps

Showing records 1 to 12 of 45: ▶▶▶



Dan Vickers' Output Area Classification (OAC)

Output Area Classification for England, Scotland and Wales
[more information](#)
 Viewed 265 times



Mouse Prices

House Price Data
[more information](#)
 Viewed 176 times



Post Office Locations

The locations of post offices in England, Scotland and Wales. The data was obtained from the post office web site in October 2007.
[more information](#)
 Viewed 76 times



London Tube Map

A map of the London Underground with geographically correct station positions taken from wikimedia.
[more information](#)
 Viewed 46 times