Department for Transport

Data Mashing Workshop

Introduction: Frank Kelly

Royal Society

25 July 2006

DfT examples

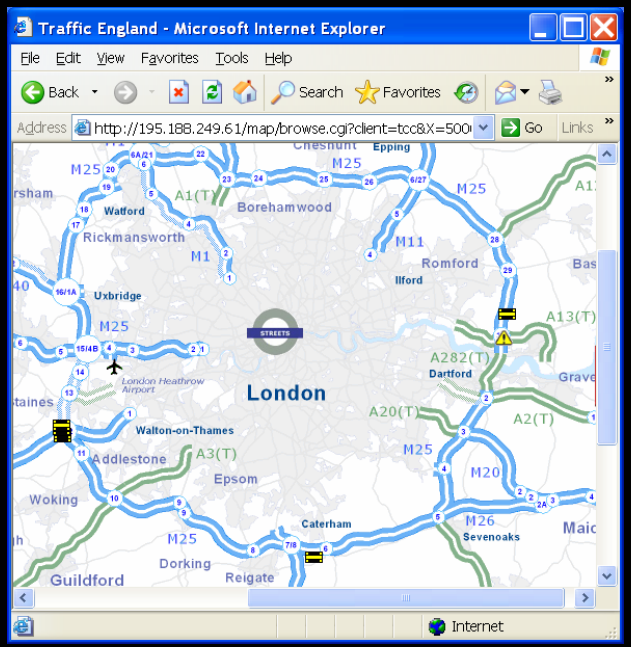
- MIDAS (motorway incident detection and automatic signalling)
- Transport Direct
- Accession
- Speed Limit database
- New sources of transport data

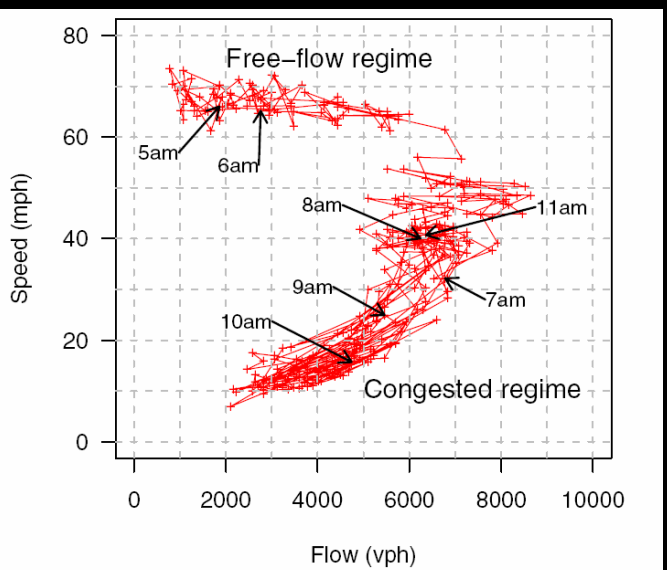
MIDAS

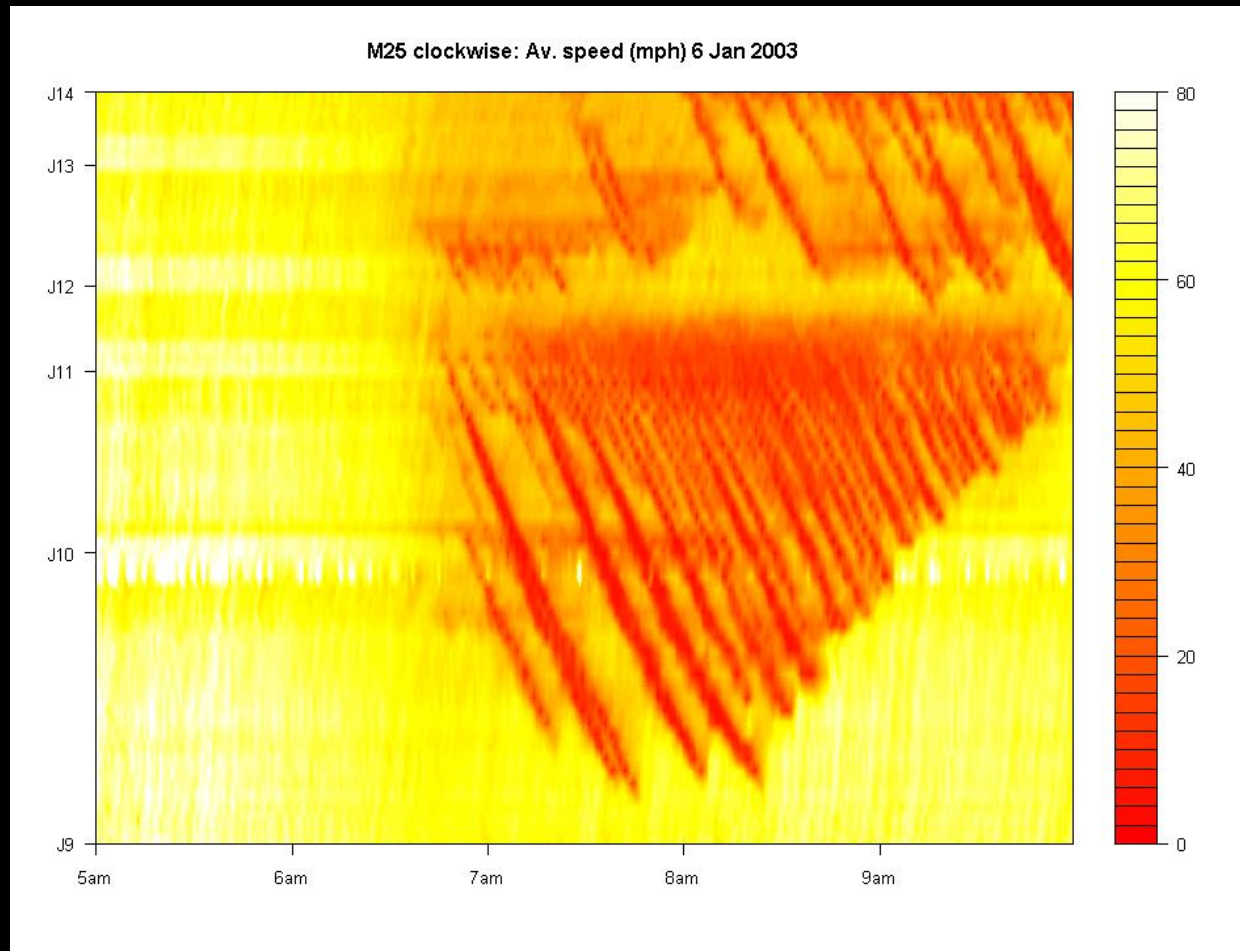
Real-time control of speed-limit signs.
Data archived since 1997.

www.ha-research.gov.uk

Flow breakdown







Data gold mining: MIDAS and journey time predictors. Richard Gibbens and Wiebke Werft, Significance 2, September 2005

MIDAS

- Initial purpose was real-time closed loop control of speed limits
- Archived data available for analysis, and able to provide insight into complex system behaviour
- Or, be fused with other data for applications not possible to envisage at time of data collection:

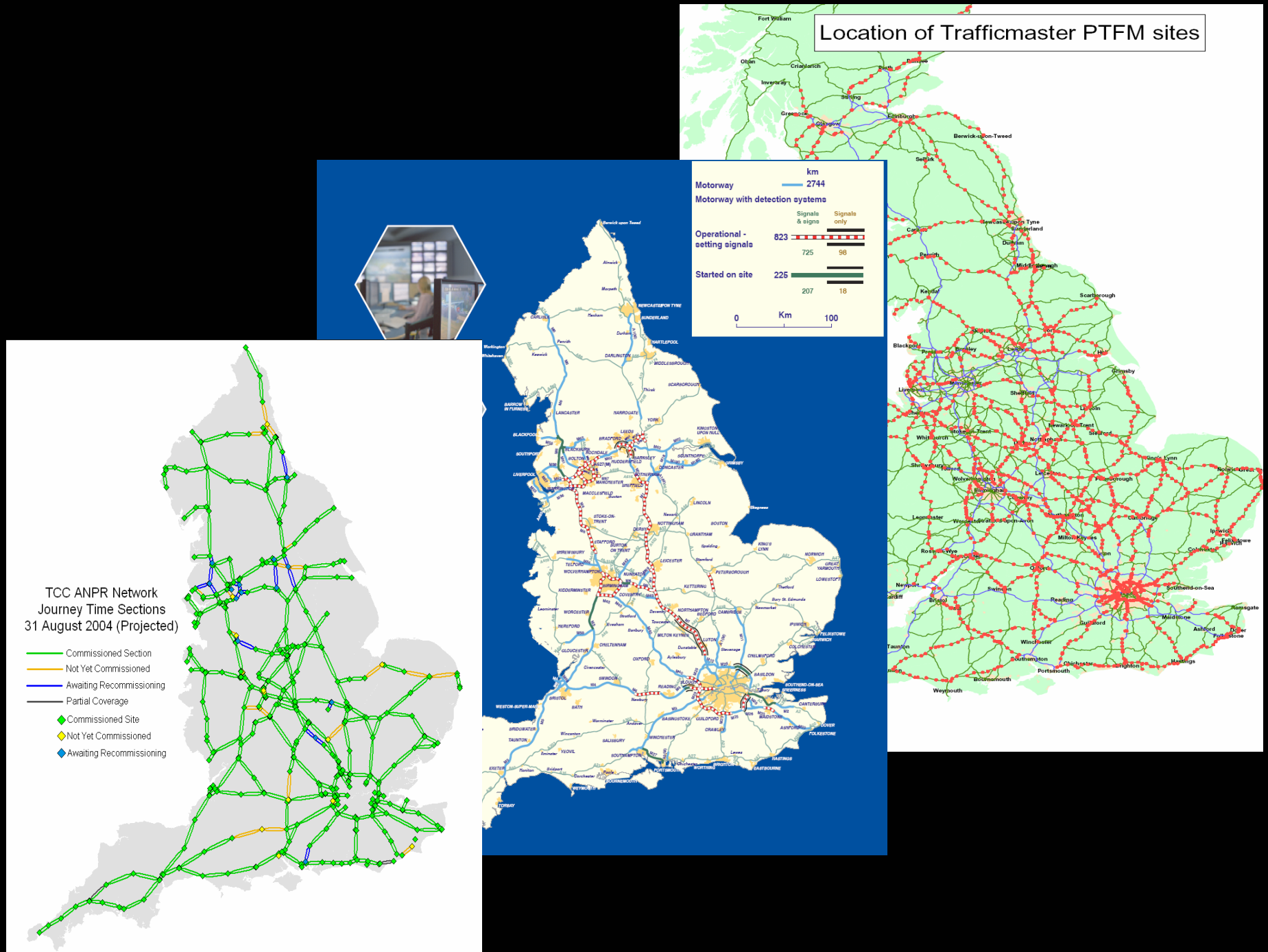
PSA target: reliable journeys

Target measured by **average vehicle delay** on each of 98 routes along the strategic road network.

- **Average delay** (time loss per vehicle km) is the difference between observed journey time and JT at a reference speed :

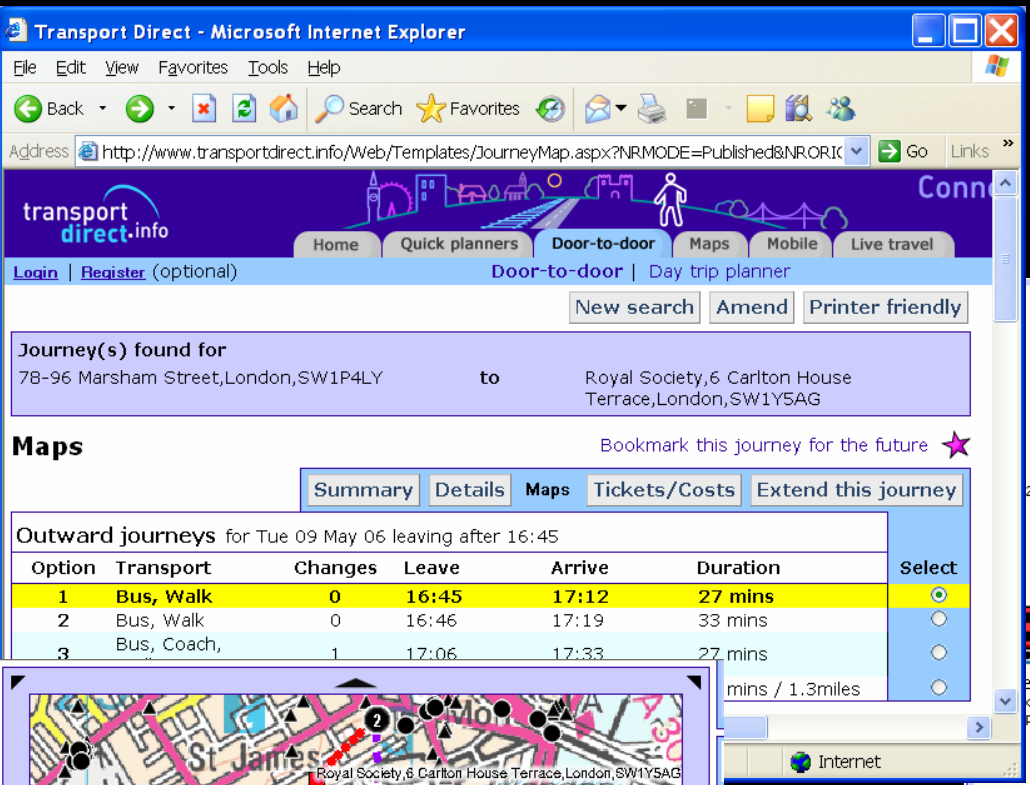
  $= ((JT - refJT) * flow) / total\ vehicle\ kilometres$

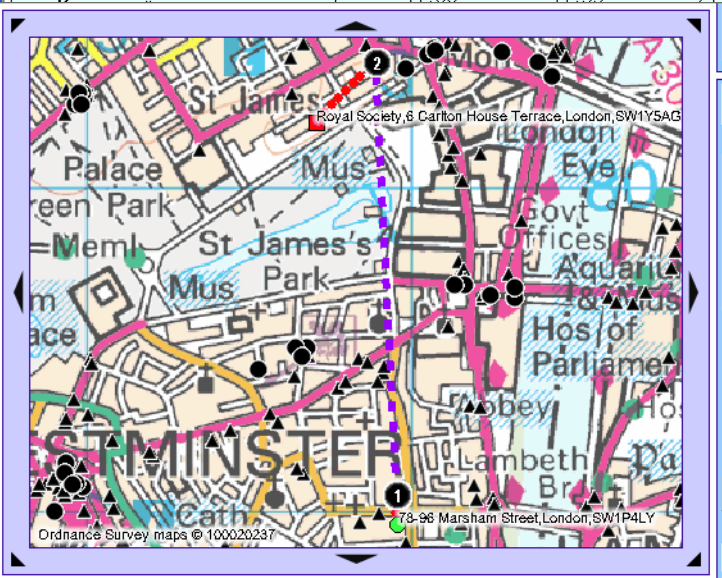
- The target will be achieved if the average vehicle delay on the 10% slowest journeys is less in 2007-08 than in the baseline period.
- Target requires integration of data from a variety of sources: MIDAS, Trafficmaster, NTCC, ITIS.

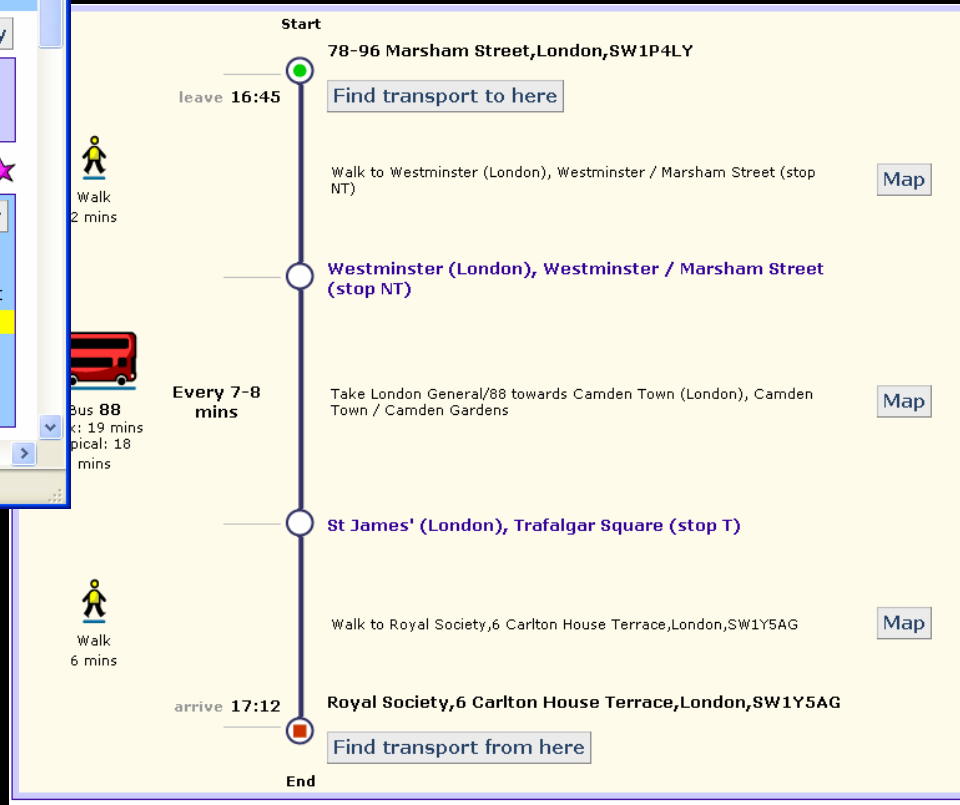

Location of Trafficmaster PTFM sites
km
Motorway 2744
Motorway with detection systems
Signals & signs
Signals only
Operational - setting signals 823
725
98
Started on site 225
207
18
0
Km
100
TCC ANPR Network
Journey Time Sections
31 August 2004 (Projected)
Commissioned Section
Not Yet Commissioned
Awaiting Recommissioning
Partial Coverage
Commissioned Site
Not Yet Commissioned
Awaiting Recommissioning

Transport Direct

The vision for Transport Direct is to provide a comprehensive, easy-to-use multi-modal travel information and ticketing service

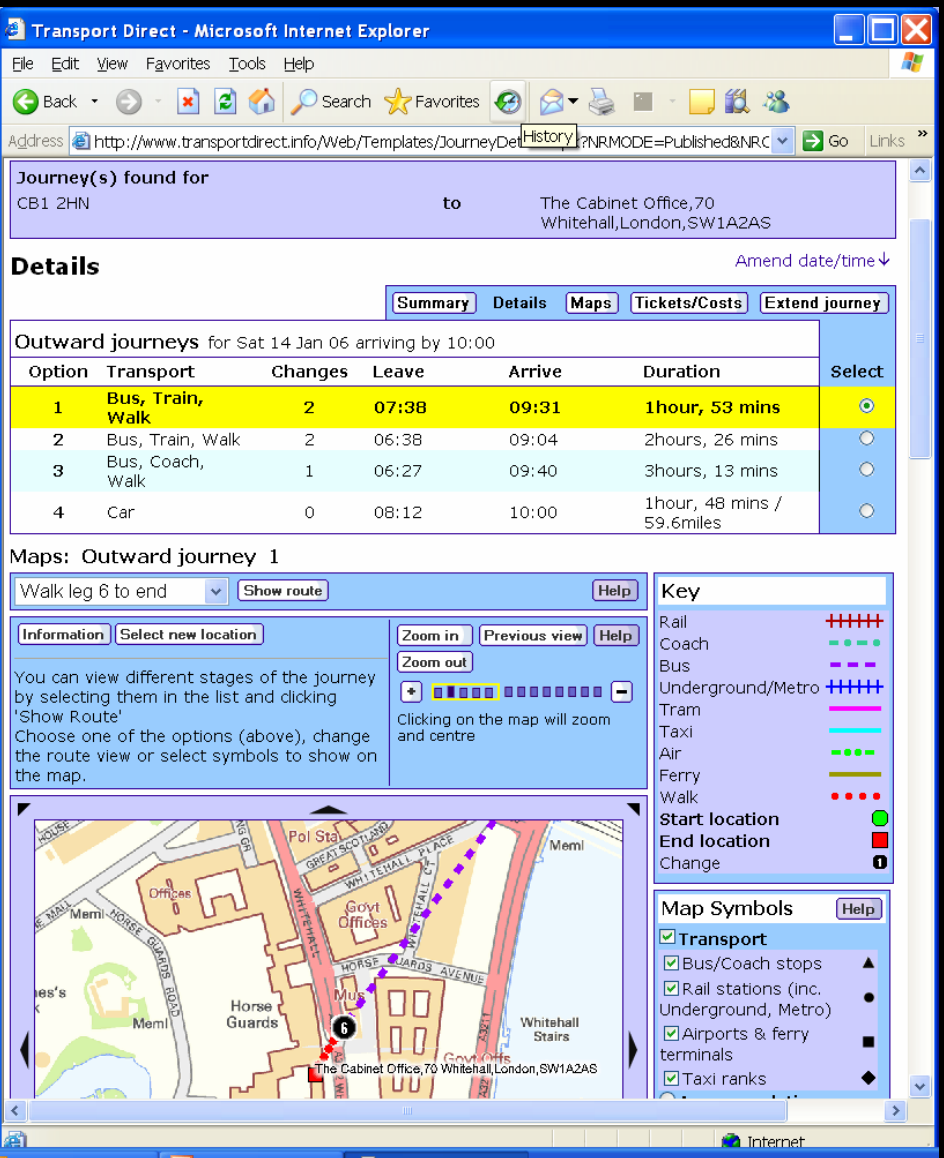






www.transportdirect.info

Transport Direct



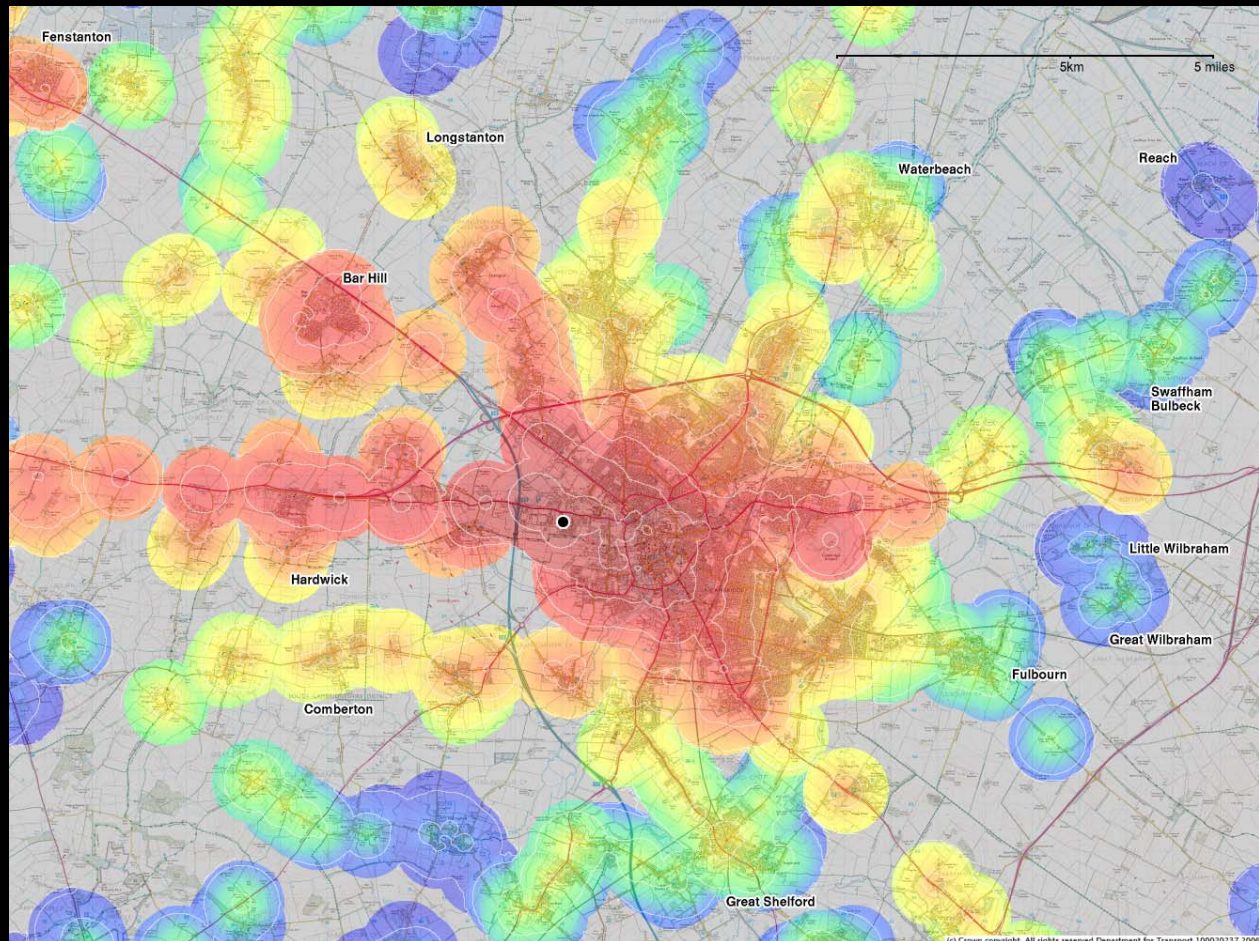
Transport Direct is, in reality, an enormous virtual team incorporating hundreds of organisations and individuals
Nick Illsley, Chief Executive

Each of over a hundred sources needed to agree to provide their data and also to make it available in common standards and formats. (Example task: agree a unique number for each bus stop in the country…)

Data useful for many other applications….

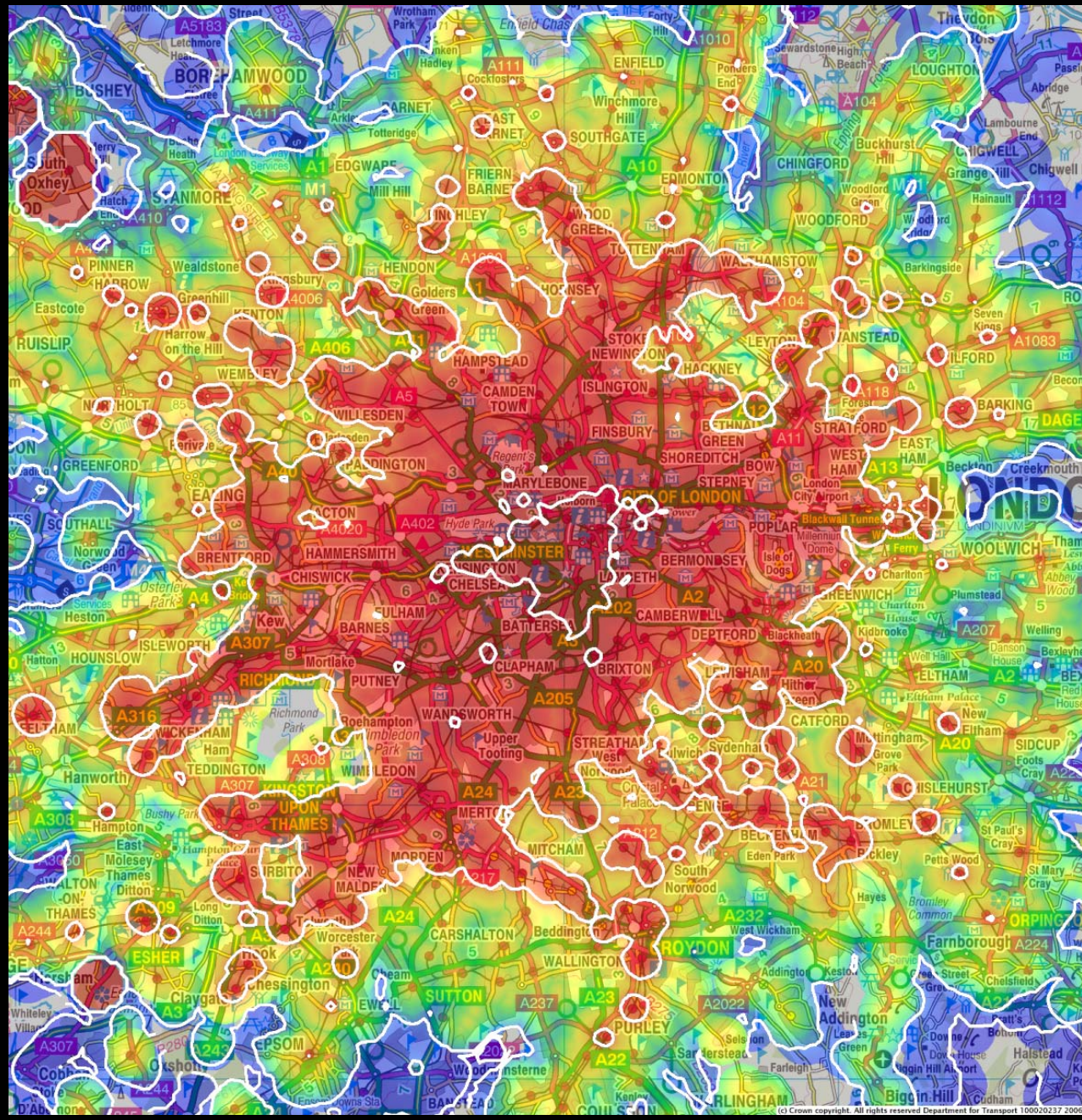
Isochrones

Map of Cambridge and surrounds showing times of departure to reach the West Cambridge site by 9 o'clock on a weekday, by public transport

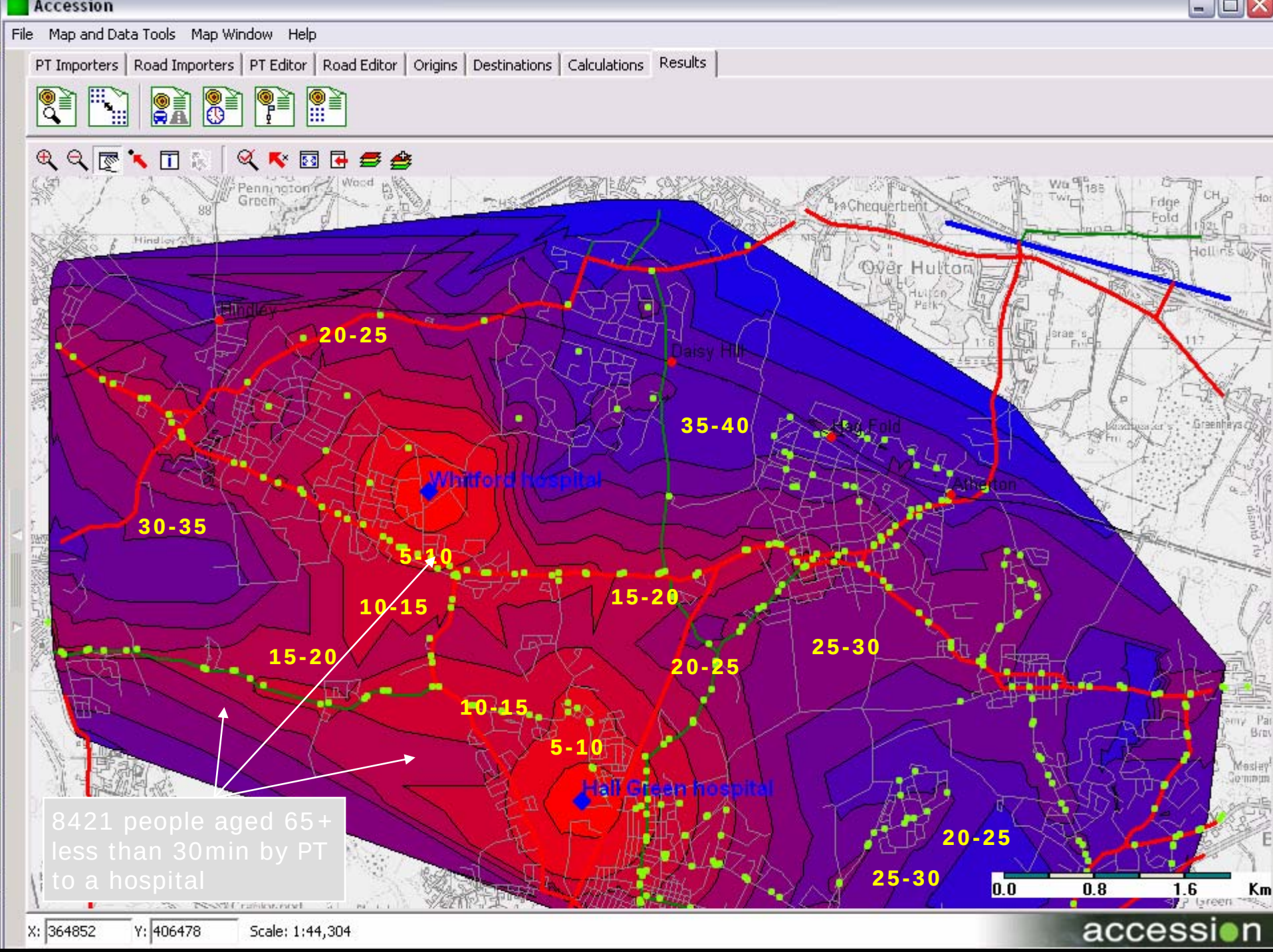


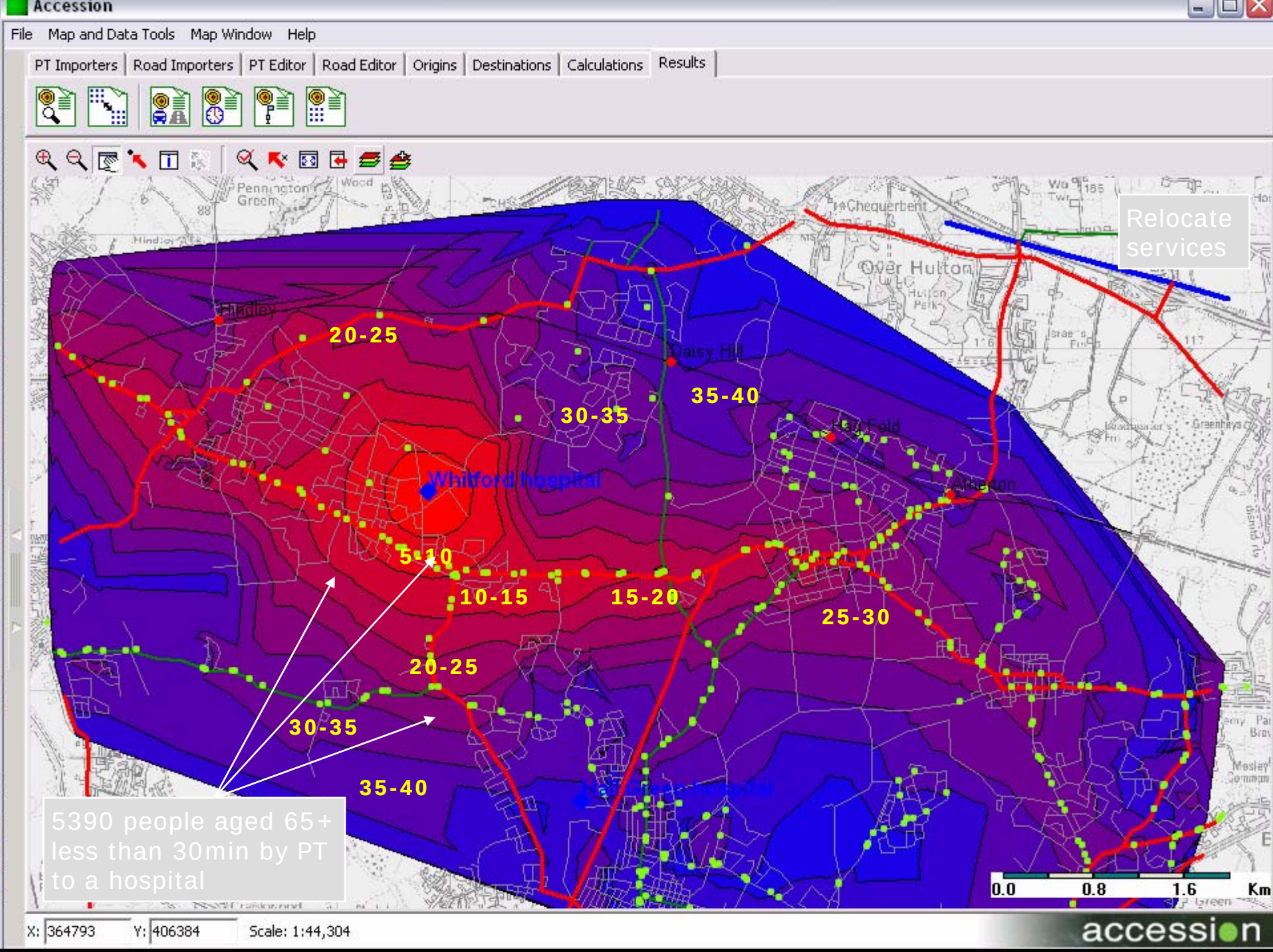
www.mysociety.org

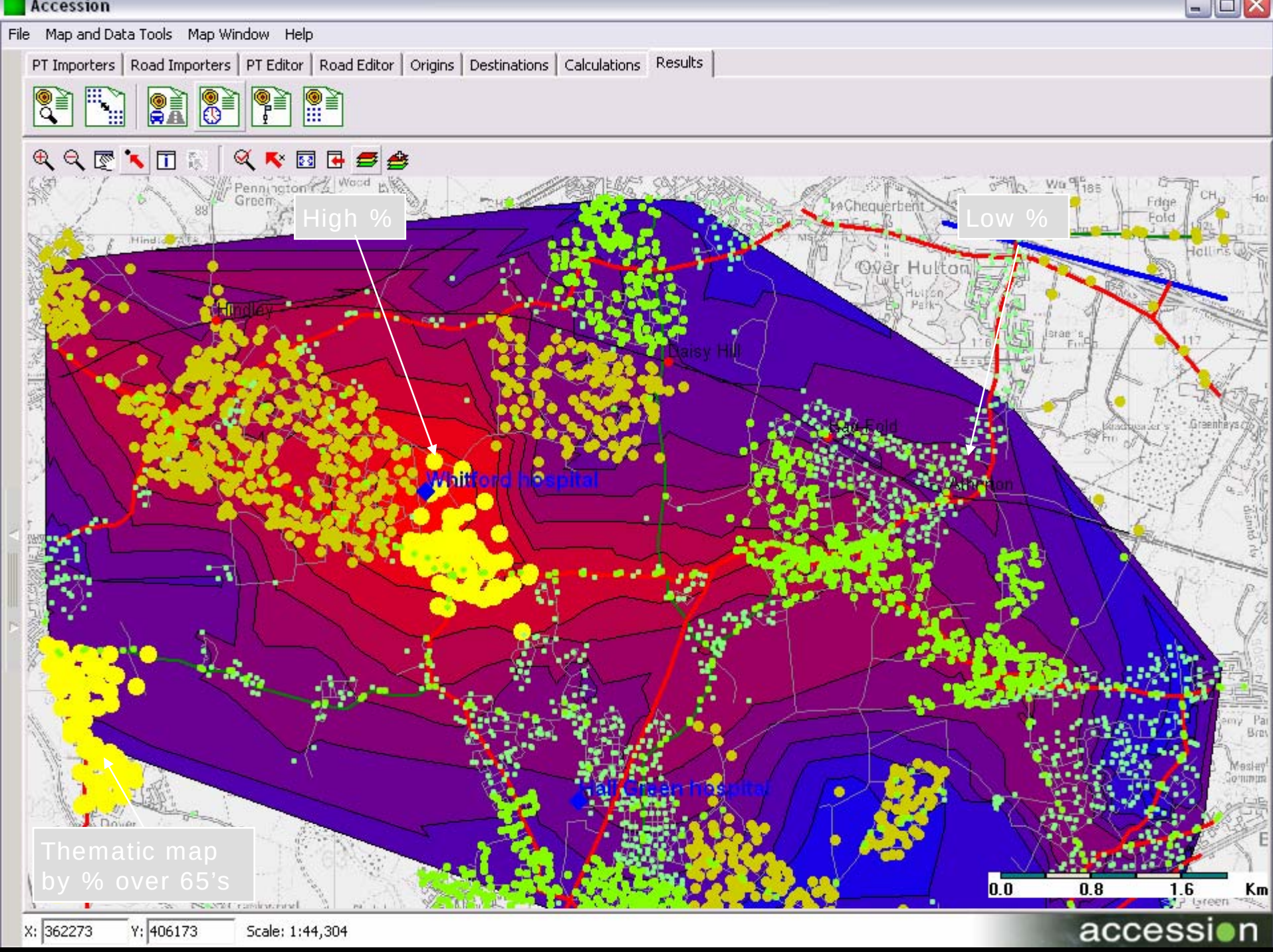
Map of central London and suburbs showing times of departure to reach the Department for Transport building by 9 o'clock on a weekday morning

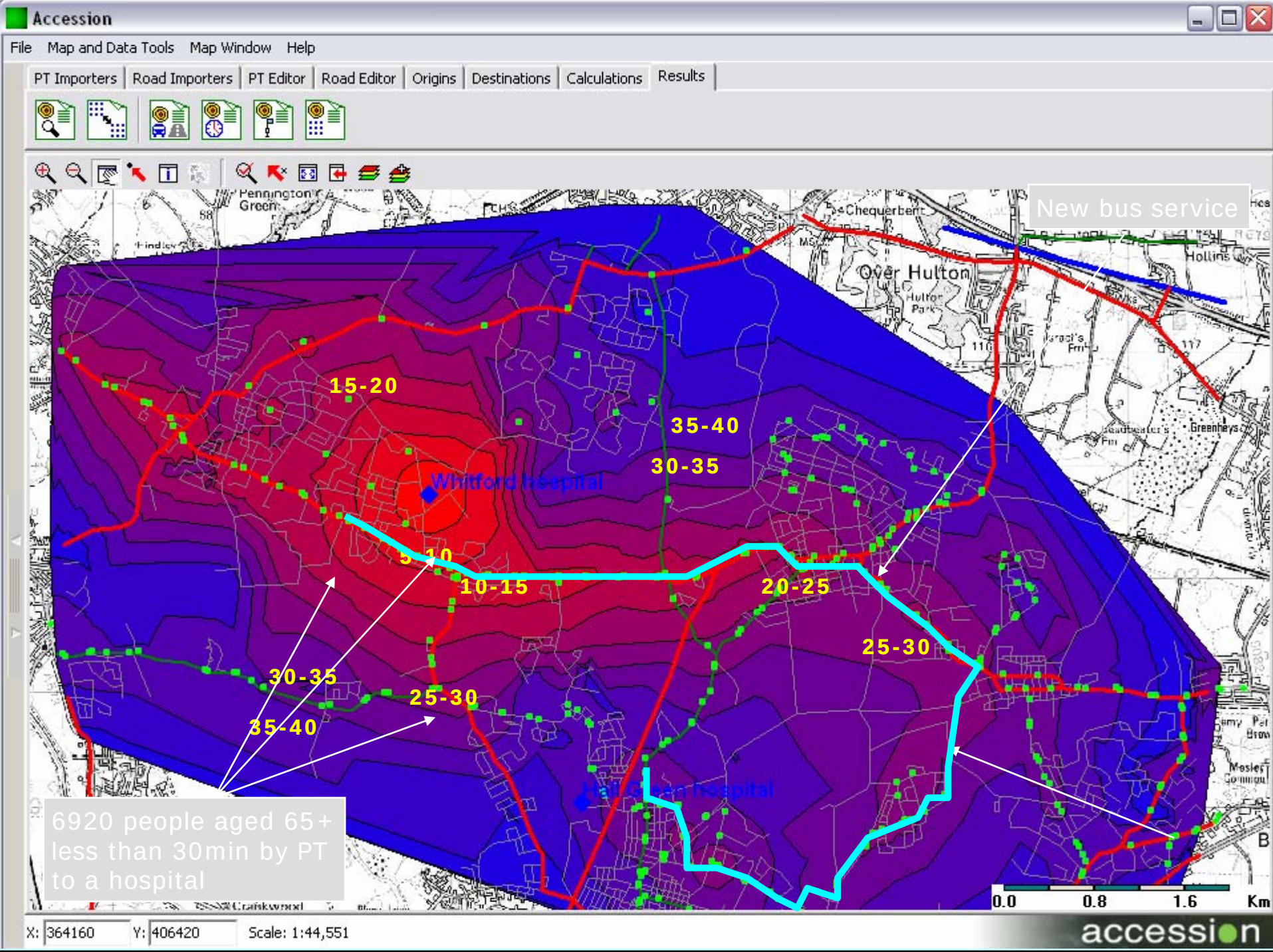


www.mysociety.org


Accession
File
Map and Data Tools
Map Window
Help
PT Importers
Road Importers
PT Editor
Road Editor
Origins
Destinations
Calculations
Results
Pennington Green
Chequerbent
Over Hulton
Hindley
Daisy Hill
Fold
Atherton
Whitford hospital
Hall Green hospital
20-25
35-40
30-35
5-10
10-15
15-20
15-20
20-25
25-30
10-15
5-10
20-25
25-30
8421 people aged 65+ less than 30min by PT to a hospital
0.0
0.8
1.6
Km
X: 364852
Y: 406478
Scale: 1:44,304
accession

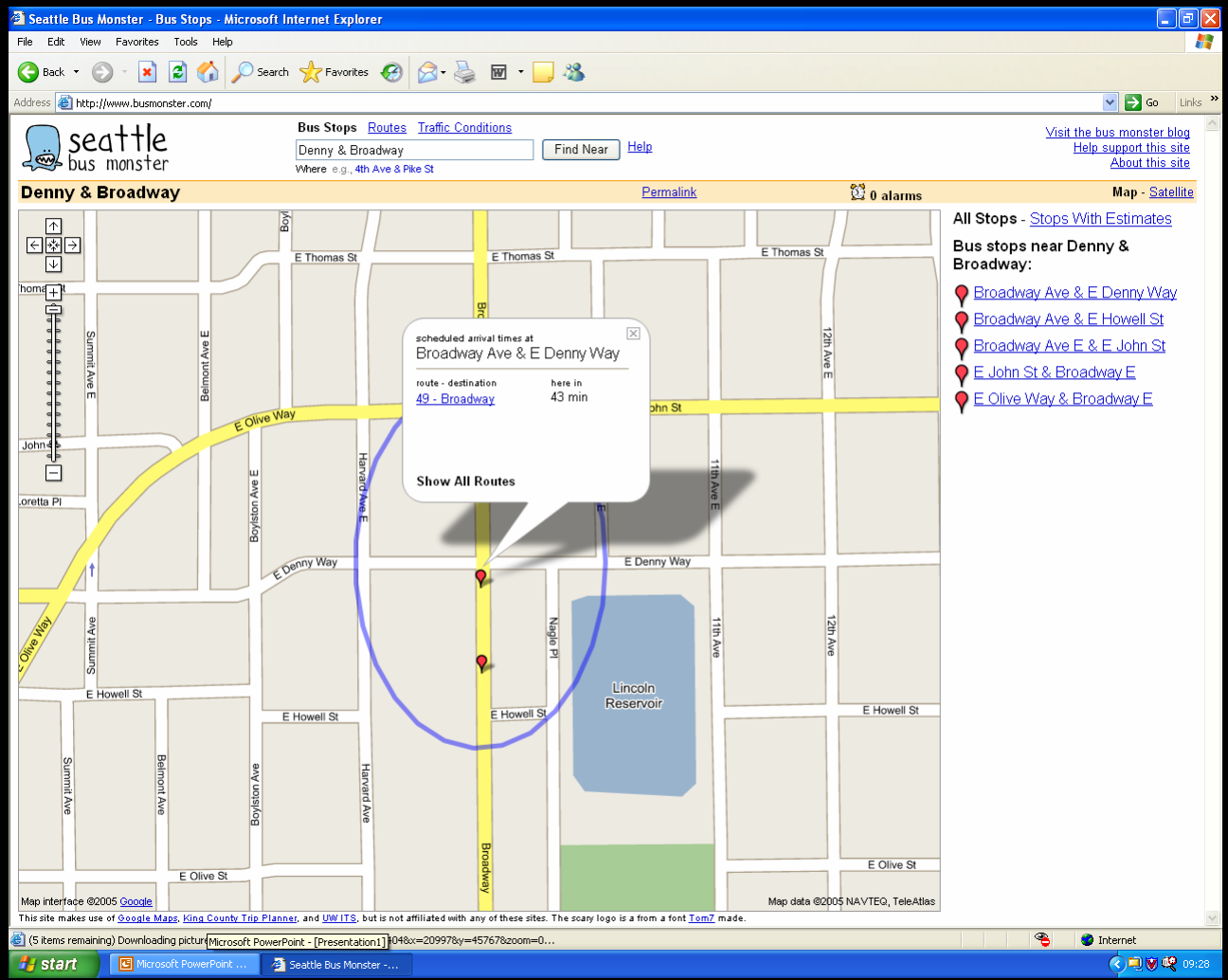

Accession
File
Map and Data Tools
Map Window
Help
PT Importers
Road Importers
PT Editor
Road Editor
Origins
Destinations
Calculations
Results
Relocate services
Hindley
Pennington Green
Chequerbent
Over Hulton
Daisy Hill
Hag Fold
Atherton
Whitford hospital
20-25
30-35
35-40
5-10
10-15
15-20
25-30
20-25
30-35
35-40
5390 people aged 65+ less than 30min by PT to a hospital
0.0
0.8
1.6
Km
X: 364793
Y: 406384
Scale: 1:44,304
accession


Accession
File
Map and Data Tools
Map Window
Help
PT Importers
Road Importers
PT Editor
Road Editor
Origins
Destinations
Calculations
Results
High %
Low %
Whitford hospital
Hall Green hospital
Thematic map by % over 65's
0.0
0.8
1.6
Km
X: 362273
Y: 406173
Scale: 1:44,304
accession


Accession
File
Map and Data Tools
Map Window
Help
PT Importers
Road Importers
PT Editor
Road Editor
Origins
Destinations
Calculations
Results
New bus service
15-20
35-40
30-35
Whitford hospital
5-10
10-15
20-25
25-30
30-35
25-30
35-40
6920 people aged 65+ less than 30min by PT to a hospital
0.0
0.8
1.6
Km
X: 364160
Y: 406420
Scale: 1:44,551
accession

Web mashing - (busmonster)

Alternatives to government as provider of “front-end” information?



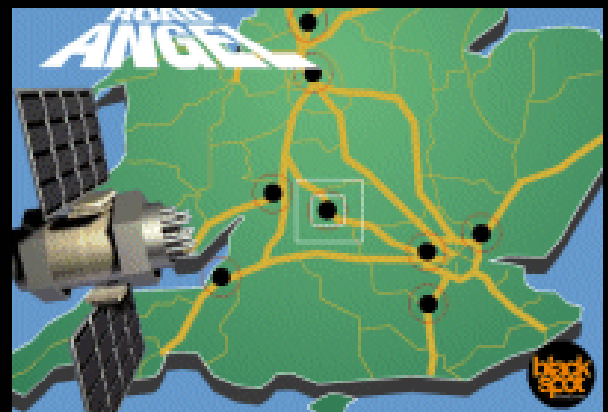
Example: Bus Monster begins with Google Maps, overlays bus stops by scraping the King County Metro Trip Planner, adds real-time estimates of bus arrival times using the REST interface to University of Washington ITS, and adds traffic images using a number of Washington State web sites

PSA target: road safety

To reduce the number of people killed or seriously injured in Great Britain in road accidents by 40% … by 2010

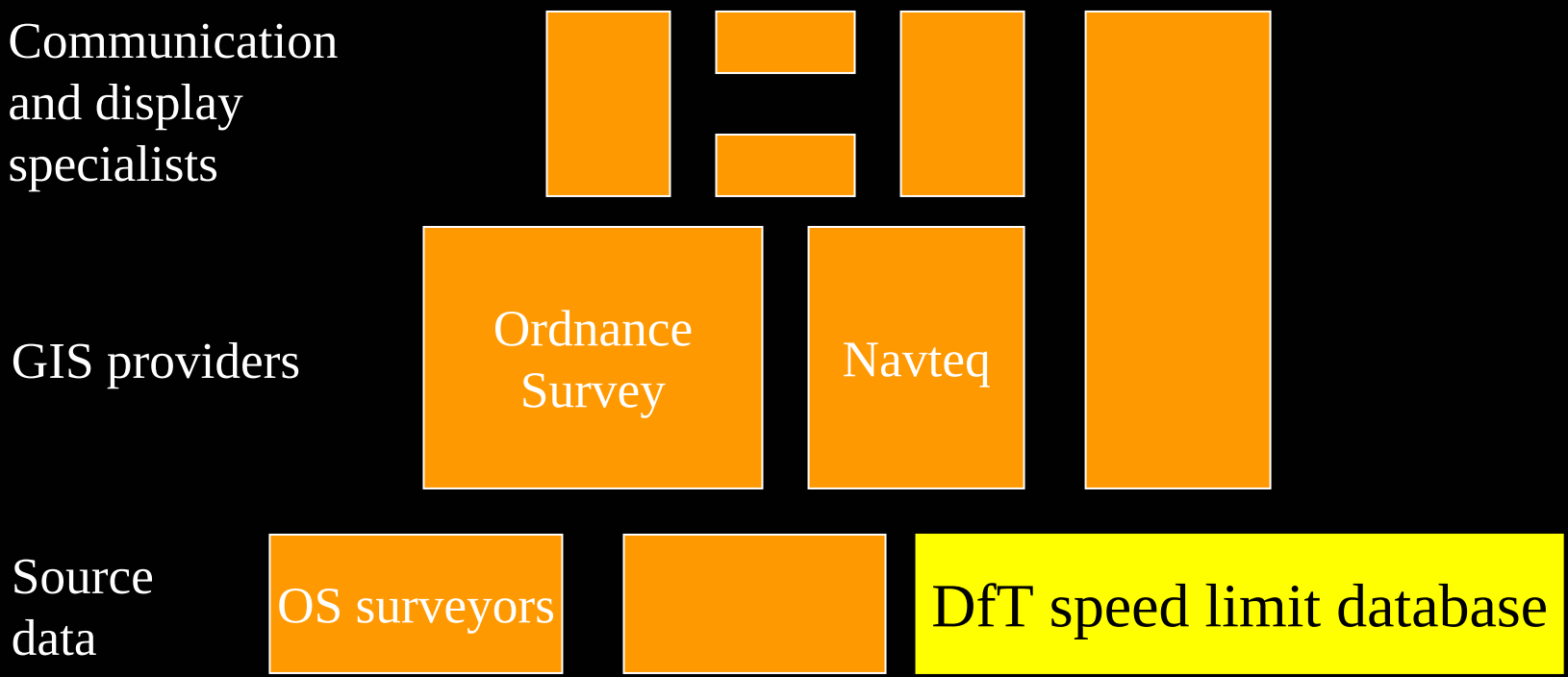
Over a million GPS devices on the road
(TRL estimate)

Major application: speed camera alert -



Speed limit database

Should the DfT make freely available a database of road speed limits in open format?



Value for money?

- Benefit-cost ratios of over 100
- OS has trading fund status
- Intellectual Property Rights

David Rhind: "There are some substantial potential benefits from having this and making it generally available, perhaps in cars: to make it useful, though, the coordinates of every section of road are needed and the obvious source is OS. Ideally, the DfT would like to make the entirety of this data – including the coordinates – freely available; that is, free from copyright and easily shareable, in the public domain. This appears to be enormously difficult."

www.foundation.org.uk/pdf18/fst18_9.pdf

New sources of transport data

www.payasyoudriveinsurance.co.uk

- smartcards, mobile phones, pay as you drive insurance
- trade-offs between privacy, convenience, personalisation

Data Grand Challenge

- Review evidence base informing Government's data charging policies
- Ensure data strategies adequately informed by understanding of science and technology
- Establishment of a cross-gov data mashing lab

Cross-Gov Mashing Lab?

- Developing the algorithms and computer architectures necessary to handle and search large data sets is a major scientific challenge
- Government cannot replicate the capability of companies such as Microsoft and Google
- Government does have a role in enabling the delivery of innovative solutions by resolving issues that impede data access and use
- Experimentation with mashing (primarily of government data) in a public-private partnership could explore
  - the legal, social, economic and political issues
  - service delivery, efficiency

Questions

- Would it bring benefits?
- Would it work?
- If yes to both, how should it be realised, and what are the major obstacles?