



# Integration of 4 Traveline Regions for Journey Planning

Public Transport Interest Group Seminar

*Tuesday, 27 April 2010*

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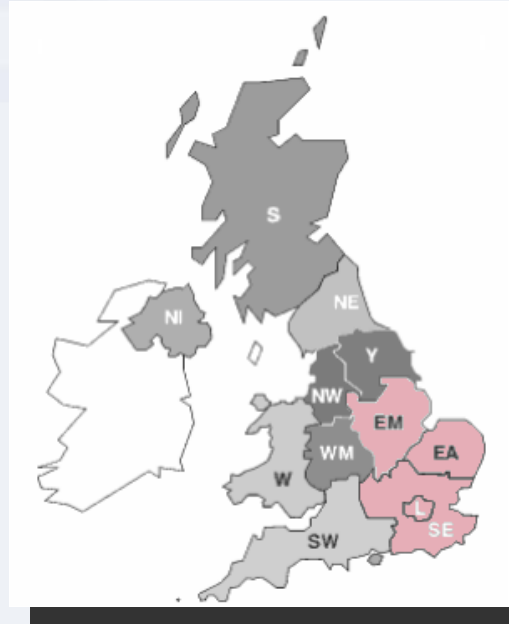
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- ➔ **Cross Border Queries**
- ➔ **Timetable Data**
- ➔ **Integrated GIS Data and Maintenance**
- ➔ **Maps for Traveline Regions**
- ➔ **Dictionaries for Location Search**
- ➔ **Different User Interfaces on a Common Infrastructure**
- ➔ **Next Steps: Integration of Real time Data**

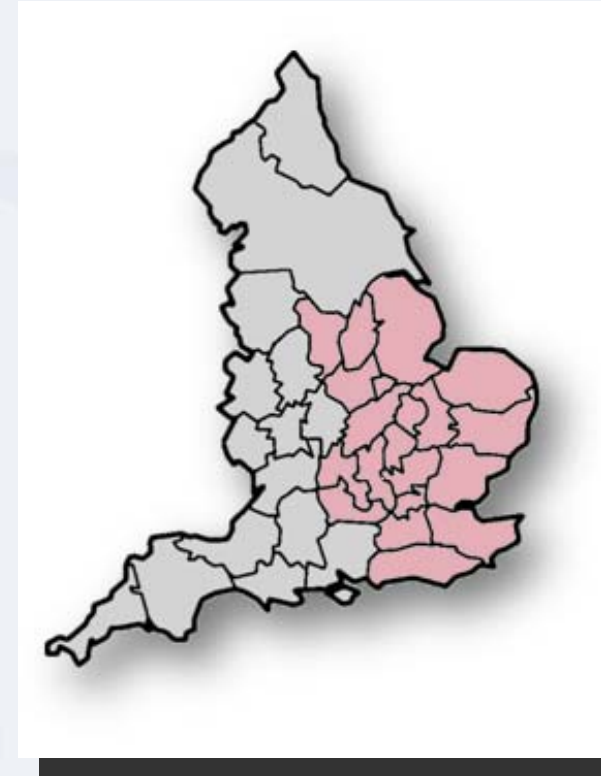
## Traveline Regions London, South East, East Anglia and East Midlands



Map basis: wikipedia.org



Map basis: traveline.org.uk



Map basis: wikipedia.org

England: **50m** inhabitants

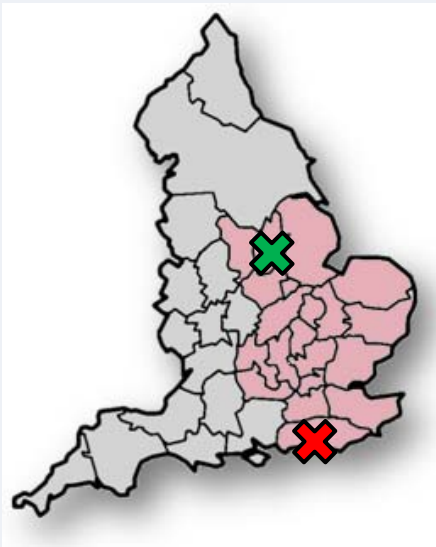
„SELMA“: 20 Counties and 32 London Boroughs with **22m** inhabitants (45% of England): *GL: 7m, SE: 8m, EA: 2.8m, EM: 4.2m*

## Cross Border Queries

East Midlands ➔

London ➔

South East



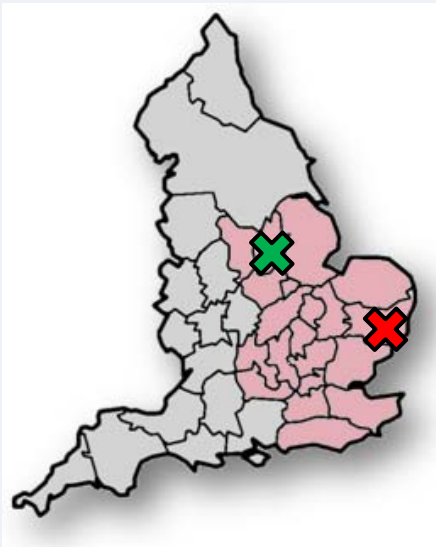
From Nottingham to Brighton (Brighton & Hove)

You asked to travel on Tuesday 20<sup>th</sup> April departing at 1450  
Default options were used (all modes, fastest journeys).

Time	Location	Action	Icons	Options
1448	Nottingham	From the centre of Nottingham walk for about 14 mins	Walking person icon	Local Map PDF
1502	Nottingham Rail Station	Take <b>PLUSBUS integrated train &amp; bus ticket available via this station - visit <a href="http://www.plusbus.info">www.plusbus.info</a></b> Take <b>East Midlands Trains</b> Train towards St Pancras International Rail Station and get off at	Train icon	Local Map PDF Timetable
1700	St Pancras International Rail Station	Walk about 12 mins to	Walking person icon, Stairs icon, Escalator icon	Local Map PDF
1712	King's Cross St.Pancras Underground Station	Take <b>Victoria Line</b> towards Brixton Underground Station and get off at	Underground icon	Local Map PDF Timetable
1723	Victoria Underground Station	Transfer on foot	Walking person icon	
1745	Victoria Rail Station	Take <b>Gatwick Express</b> Train towards Brighton Rail Station and get off at	Train icon	Local Map PDF Timetable
1850	Brighton Rail Station	Then walk for about 19 mins to the centre of Brighton (Brighton & Hove)	Walking person icon	Local Map PDF
1909	Brighton (Brighton & Hove)			Local Map PDF

## Cross Border Queries

East Midlands ➔  
London ➔  
East Anglia



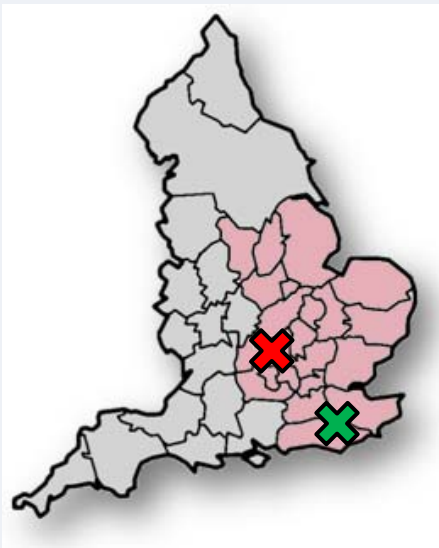
From Nottingham to Ipswich

You asked to travel on **Tuesday 20<sup>th</sup> April** departing at **1505**  
Default options were used (all modes, fastest journeys).

1448	Nottingham	Local Map PDF
	From the centre of Nottingham walk for about 14 mins	
1502	Nottingham Rail Station	Local Map PDF
	<a href="http://www.plusbus.info">PLUSBUS integrated train &amp; bus ticket available via this station - visit www.plusbus.info</a>	Timetable
	Take <b>East Midlands Trains</b> Train towards St Pancras International Rail Station and get off at	
1700	St Pancras International Rail Station	Local Map PDF
	Walk about 12 mins to	
1712	King's Cross St.Pancras Underground Station	Local Map PDF
	Take <b>Metropolitan Line</b> towards Aldgate Underground Station or <b>Circle Line</b> towards Liverpool Street or <b>Hammersmith &amp; City Line</b> towards Liverpool Street	Timetable
	and get off at	
1722	Liverpool Street Underground Station	
	Transfer on foot	
1730	Liverpool Street Rail Station	Local Map PDF
	Take <b>National Express East Anglia</b> Train towards Norwich Rail Station and get off at	Timetable
1836	Ipswich Rail Station	Local Map PDF
	Then walk for about 18 mins to the centre of Ipswich	
1854	Ipswich	Local Map PDF

## Cross Border Queries

South East ➔  
 London ➔  
 South East



From Tonbridge Town Centre, Town Lock (on Lockside) to Oxford City Centre, Gloucester Green Bus Station

You asked to travel on **Tuesday 20<sup>th</sup> April** departing at **1520**  
 Max. walk 10 mins

1514	Tonbridge Town Centre, Town Lock (on Lockside)	Local Map
	Walk about 5 mins to	
1519	Tonbridge Town Centre, Castle, Stop E (on High Street) [SMS: kntajapt] Take <b>Arriva Kent &amp; Sussex Bus 219</b> towards Tonbridge Town Centre, Tonbridge Railway Station <i>Normally operated by a low floor bus.</i>	Local Map Timetable
1522	Tonbridge Town Centre, Tonbridge Railway Station, Stop H (on Quarry Hill Road)	Local Map
	Walk about 9 mins to	
1532	Tonbridge Rail Station <b>PLUSBUS integrated train &amp; bus ticket available via this station - visit <a href="http://www.plusbus.info">www.plusbus.info</a></b> Take <b>Southeastern</b> Train towards Charing Cross Rail Station and get off at	Local Map Timetable
1611	London Bridge Rail Station	
	Transfer on foot	
1620	London Bridge Underground Station <b>LONDON BRIDGE STATION</b> Take <b>Jubilee Line</b> towards Stanmore Underground Station or <b>Jubilee Line</b> towards Wembley Park Underground Station or <b>Jubilee Line</b> towards Willesden Green Underground Station <b>JUBILEE LINE</b>	Local Map Timetable
1633	and get off at Baker Street Underground Station	
	Transfer on foot	
1636	Baker Street Underground Station Take <b>Bakerloo Line</b> towards Harrow & Wealdstone Underground Station or <b>Bakerloo Line</b> towards Queen's Park Underground Station or <b>Bakerloo Line</b> towards Stonebridge Park Underground Station	Local Map Timetable
1640	and get off at Paddington Underground Station	Local Map
	Walk about 8 mins to	
1648	Paddington, Paddington National Rail Stn Take <b>First Great Western</b> Train towards Oxford Rail Station and get off at	Local Map Timetable
1750	Oxford Rail Station	Local Map
	Walk about 11 mins to	
1801	Oxford City Centre, Gloucester Green Bus Station	Local Map

## Timetable Data (Regional)

### *South East/ East Anglia and East Midlands*

- NPTG Locality data
- NaPTAN Stop/ Station data
- Atco.cif Timetable data

### *London*

- Manual Maintenance of Stop/ Station data
  - ➔ includes all entrances
  - ➔ includes all interchanges with walking times
  - ➔ Export to NaPTAN
- Different Timetable data formats for London Underground, Docklands Light Railway and London Buses Ltd.

## Timetable Data (National) and Stop/ Station Identification

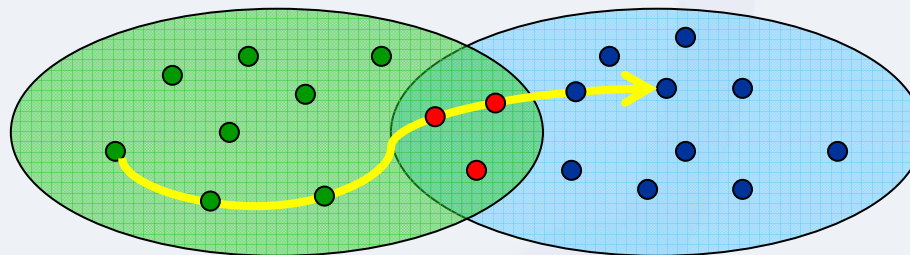
### *National Rail*

- NPTG Locality data
- NaPTAN Stop/ Station data
- RJIS (Atco.cif) Timetable data

### *National Coaches*

- NPTG Locality data
- NaPTAN Stop/ Station data
- NCSD (Atco.cif) Timetable data

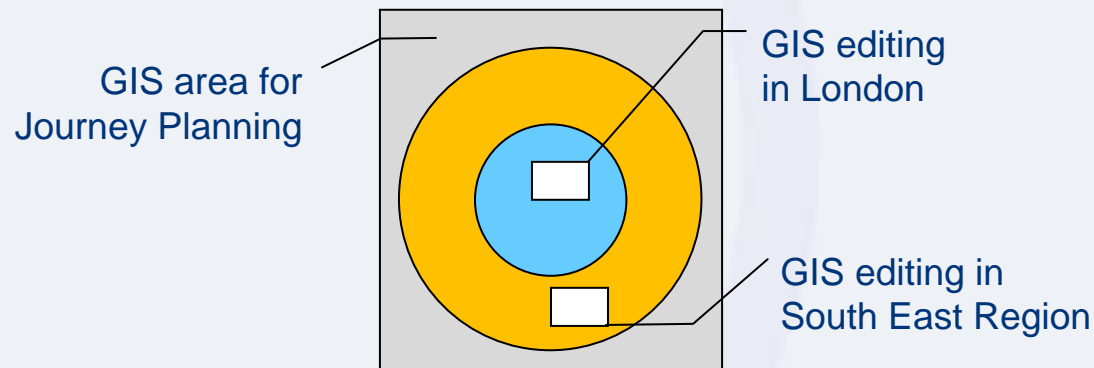
Identify same stops/ stations in different Traveline Regions via the NaPTAN ID.



## Integrated GIS Data and Maintenance

### Common GIS Server

- Exchange parts of the GIS data with other authorities that have overlapping GIS areas
- Edit different areas of the GIS data at the same time
- control which user may read and/or edit in which area
- control the publication of long term works on the GIS data (e.g. work on the data over several weeks without publishing intermediate sets of data)
- GIS update process (yearly basis) for entire GIS region



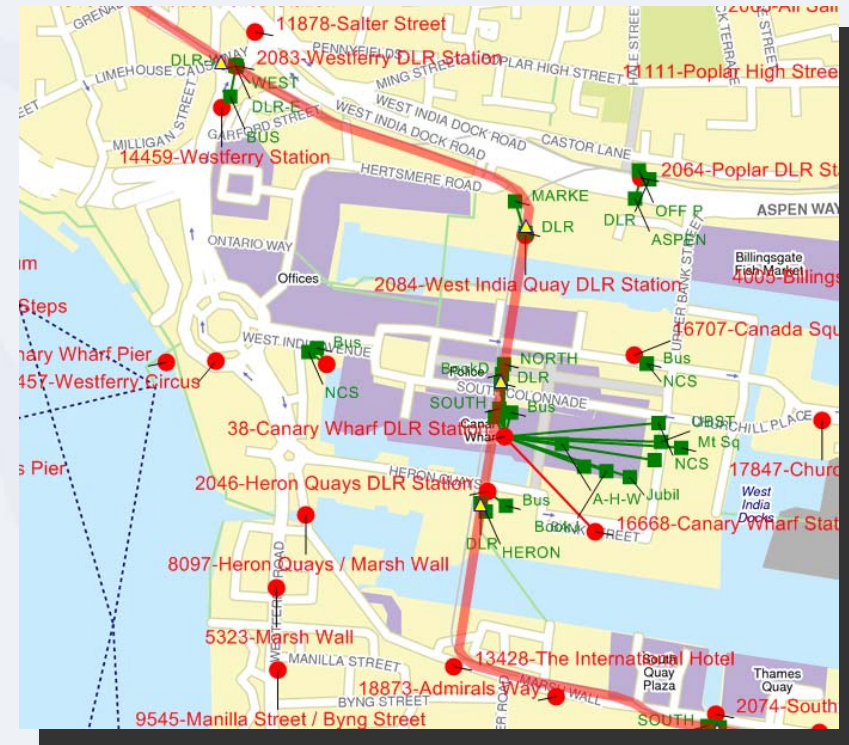
## Integrated GIS Data and Maintenance

### GIS Data Maintenance

- Add missing footpaths and streets
- Change geometry of existing routes
- Attribute cycle routes
- Add POIs
- Add areas for mapping purpose
- etc.

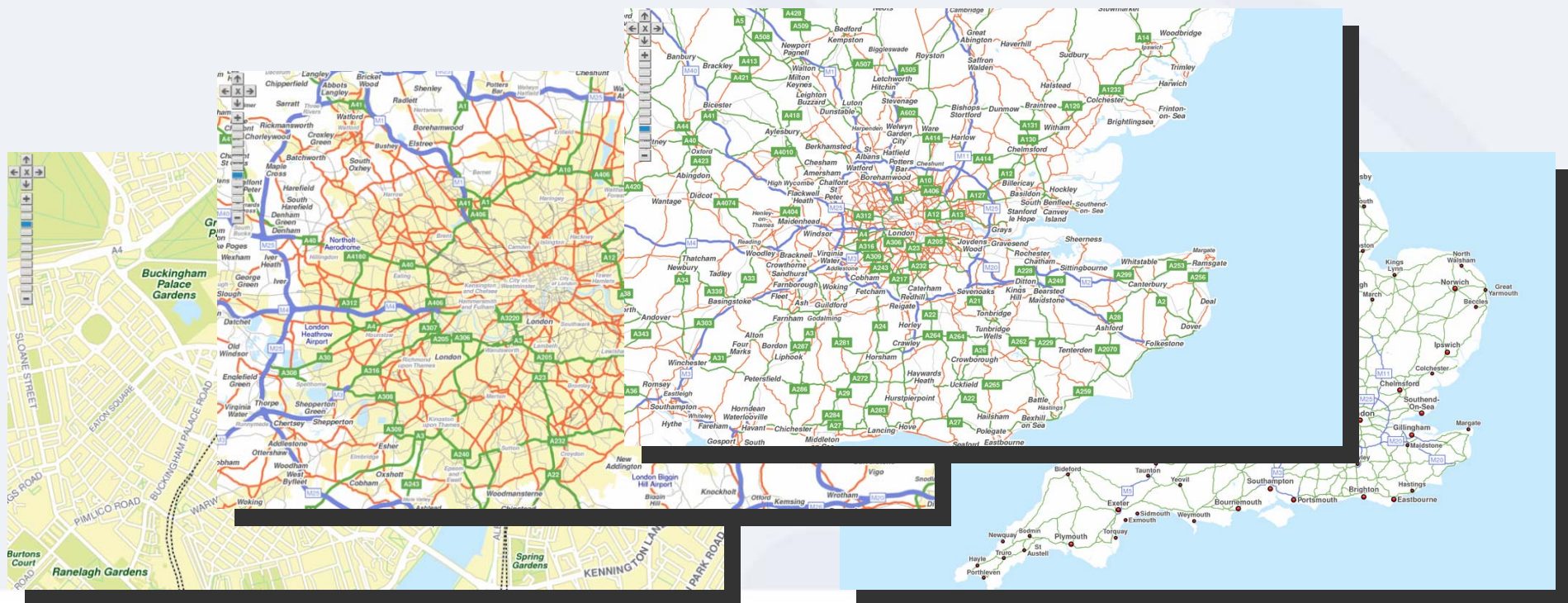
### Reference Public Transport Objects

- Reference stops and stations to GIS
- Reference timetables to GIS



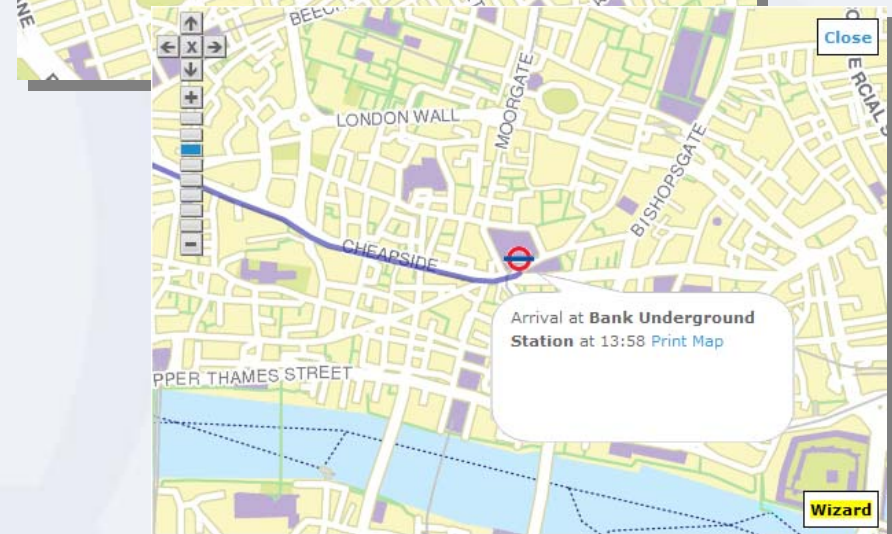
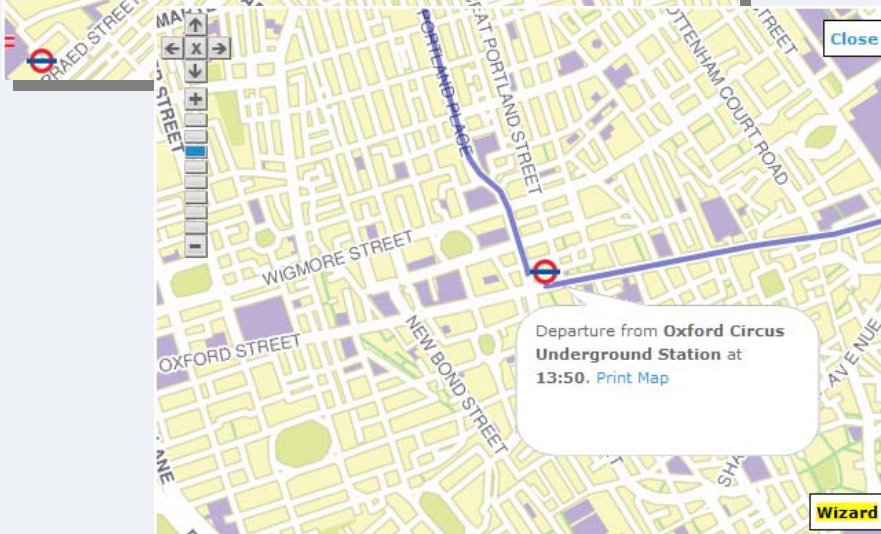
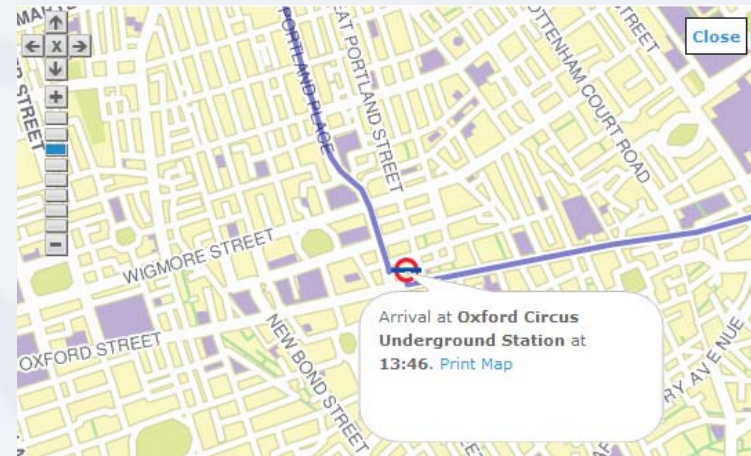
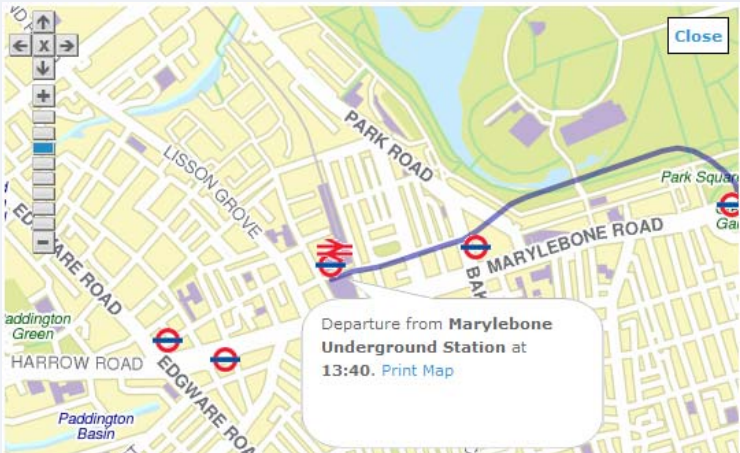
## Maps for Traveline Regions

- Maps are calculated based on available GIS data (enriched Navteq)
  - ➔ Interactive maps (PNG, AJAX)
  - ➔ PDF maps
- TL Region wide selection of origin and destination on an interactive map
- Journey results are displayed on the interactive map



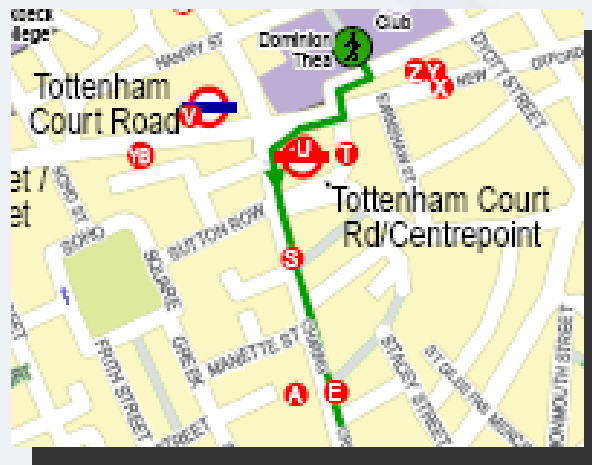
## Maps for Traveline Regions

➔ Wizard shows details of journey



## Maps for Traveline Regions

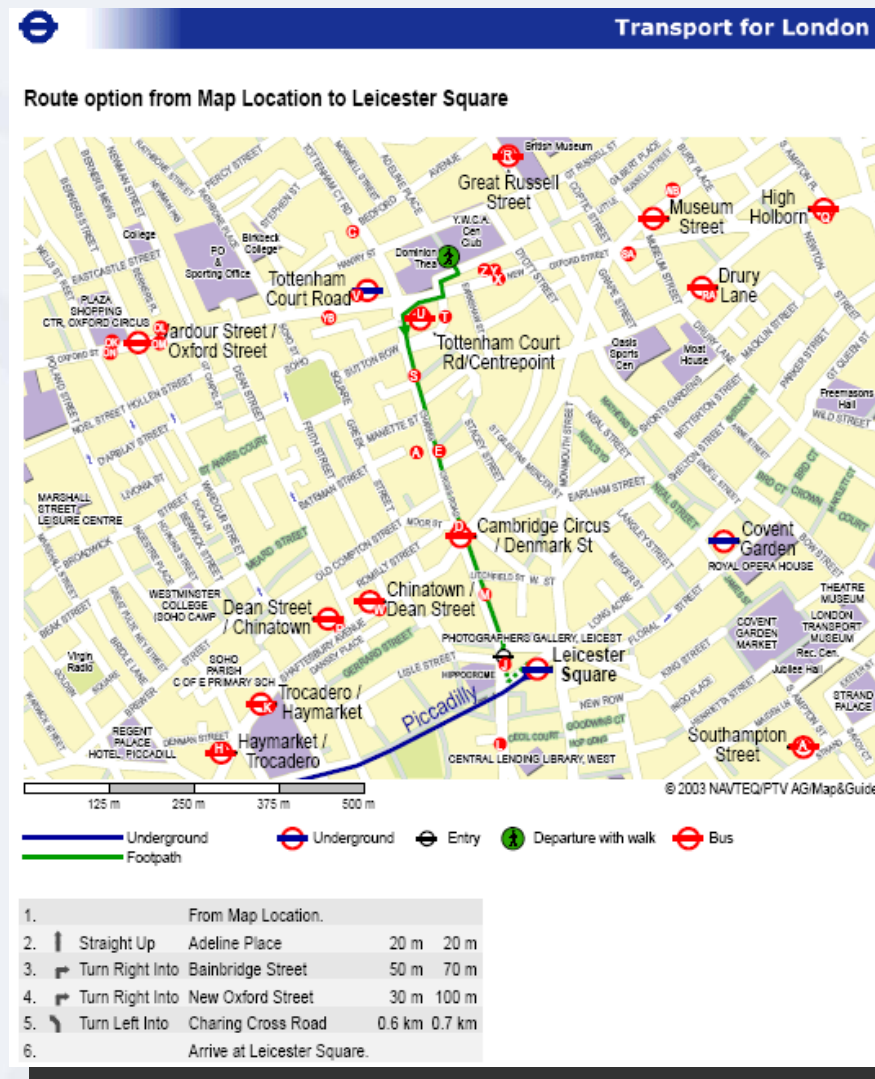
➔ Download journey maps as PDF



1.	From Map Location.		
2.	↑ Straight Up	Adeline Place	20 m 20 m
3.	↗ Turn Right Into	Bainbridge Street	50 m 70 m
4.	↘ Turn Right Into	New Oxford Street	30 m 100 m
5.	↙ Turn Left Into	Charing Cross Road	0.6 km 0.7 km
6.	Arrive at Leicester Square.		

Transport for London

Route option from Map Location to Leicester Square



1. From Map Location.

2. ↑ Straight Up Adeline Place 20 m 20 m

3. ↗ Turn Right Into Bainbridge Street 50 m 70 m

4. ↘ Turn Right Into New Oxford Street 30 m 100 m

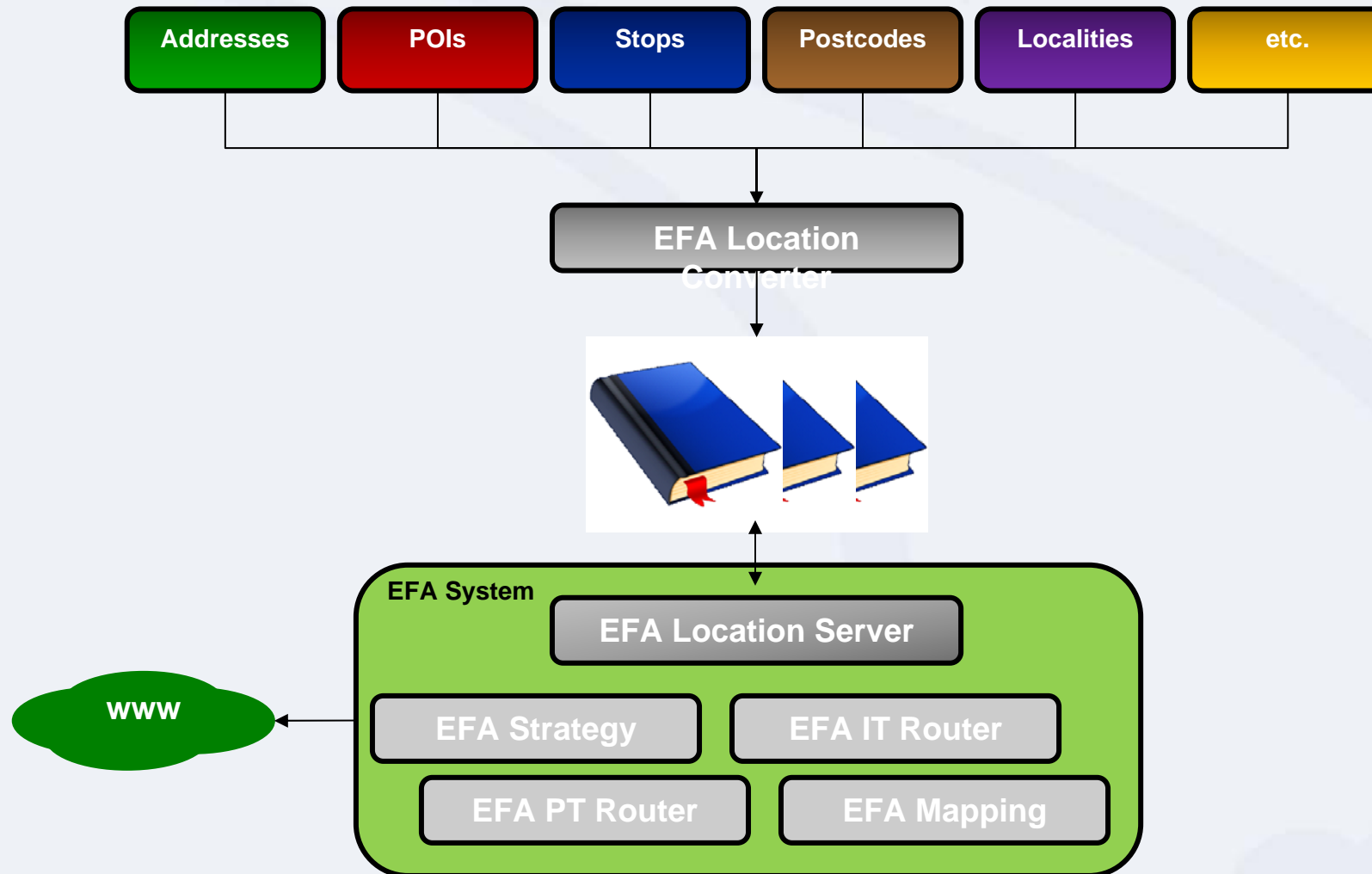
5. ↙ Turn Left Into Charing Cross Road 0.6 km 0.7 km

6. Arrive at Leicester Square.

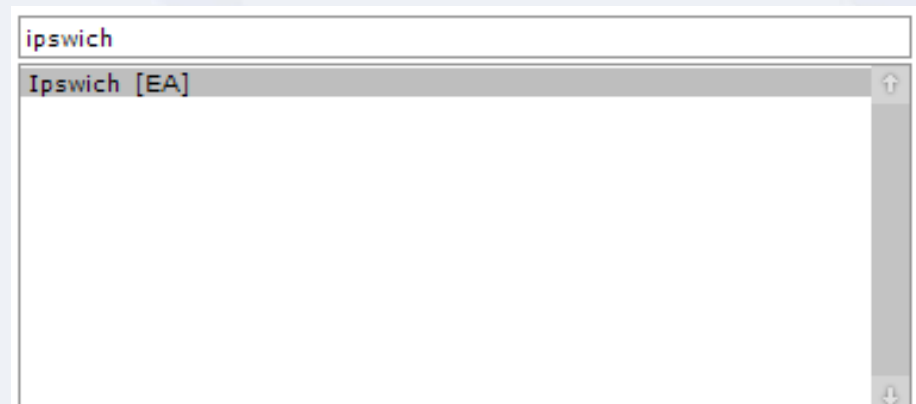
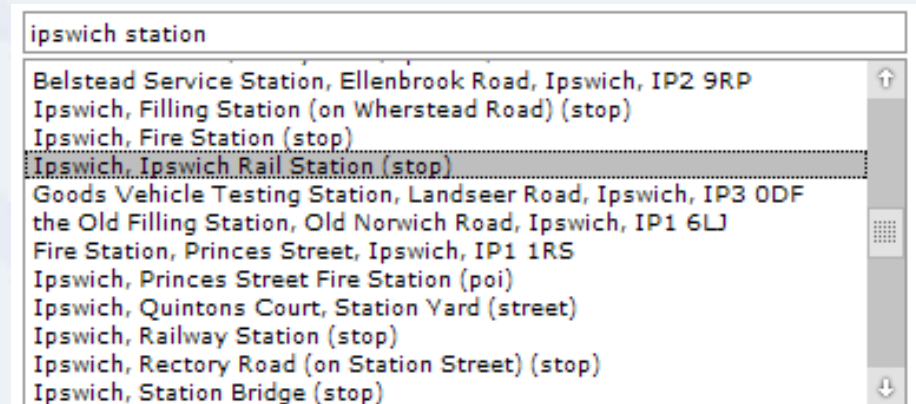
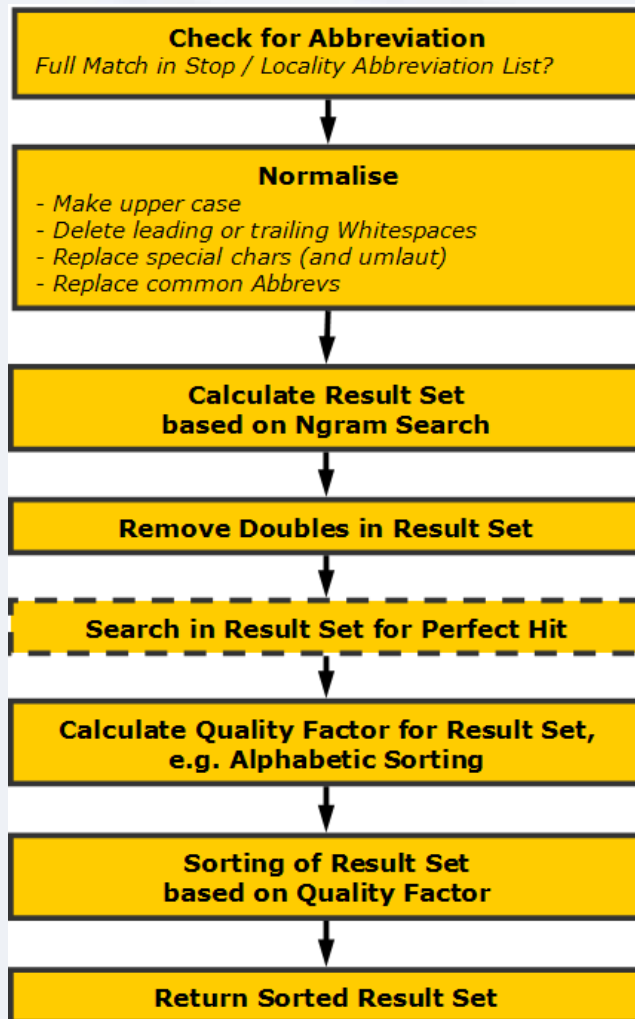
Legend:

- Underground
- Footpath
- Underground
- Entry
- Departure with walk
- Bus

## Dictionary for Location Search



## Dictionaries for Location Search and Search Process



## Different User Interfaces on a Common Infrastructure

- Several localities „Gillingham“ exist
- Each region has its own portal to the same background EFA system
- Match pre-selection adapted for each portal

### Portal East Anglia (Norfolk)

Departure Board

You can ask for departures from nearby stops by entering a postcode, postal address, town or village, a named station or stop, or a point of interest, but do NOT include the name of the County.

From \*   
Gillingham (Kent) (centre of)  
Gillingham (Norfolk) (centre of)

Map

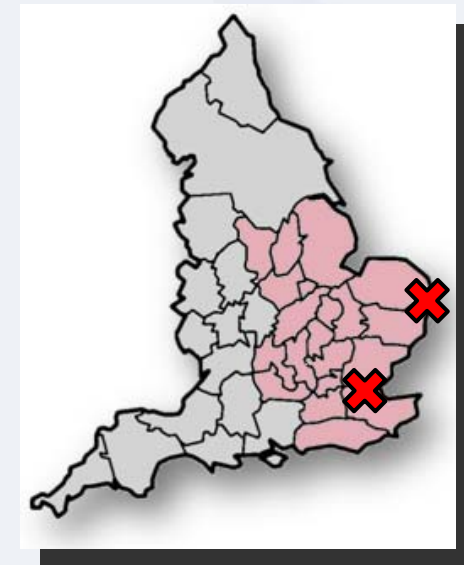
### Portal South-East (Kent)

Departure Board

You can ask for departures from nearby stops by entering a postcode, postal address, town or village, a named station or stop, or a point of interest, but do NOT include the name of the County.

From \*   
Gillingham (Kent) (centre of)  
Gillingham (Norfolk) (centre of)

Map





## Next Steps: Integration of Real time Data

- AVL Systems deliver real time data
- Data is integrated to Journey Planner calculation routine

**Journey Planner** 1 2 3

Route details English Go

[edit search options](#) [new journey](#) [return journey](#) [onward journey](#)

**Journey Summary**

Departing: Friday 22 February 2008 at: 13:40  
 From: Euston  
 To: Watford Junction Rail Station  
 Restrictions:

Time	Details	Information
13:34	<b>start</b> Take <b>London Midland</b> towards Tring Rail Station	<b>Average journey time: 20 mins</b> Scheduled for: 13:32 h
13:54	<b>end</b> Watford Junction Rail Station	2 minute(s) delayed

**Maps**  
 Euston Rail Station  
 Watford (Herts), Watford Junction Rail Station

Maximum journey time: 00:20  
 Interchanges: 0  
 Not what you expected? [Click here for information on planned service disruptions.](#)  
 Please check ticket options and fare prices at <http://www.tfl.gov.uk/faresandtickets>.

[Print route](#) [Email this route to a friend](#) [Text me this route](#)

**Timetables**

**Selected departures from: Richmond**

Time	Route	Destination
13:48	<b>South West Trains</b>	Windsor Town Centre, Windsor & Eton Riverside Rail Station
13:49	<b>South West Trains</b>	Waterloo Scheduled for 13:47 h 2 minute(s) delayed
13:57	<b>London Overground</b>	Stratford
13:58	<b>South West Trains</b>	Waterloo
13:59	<b>South West Trains</b>	Waterloo
14:04	<b>South West Trains</b>	Waterloo
14:06	<b>South West Trains</b>	Reading, Reading Rail Station
14:11	<b>London Overground</b>	Stratford



**Thank you for your attention.**