

## ITS Radar Helpdesk Query: Worldwide traffic/journey time forecasters

Query no:	11	Query initiator:	Damian Morris
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Query topic areas:	What traffic/journey time forecasters are offered around the world? What features do they have? What are their limitations? Data sources?		
Categories and level of relevance:	Traffic Management Technology	Very relevant	
	Traffic & Travel Information	Very relevant	
	Driver Behaviour		
	Technology Solutions	Very relevant	
Transferability to Highways Agency:	Meets Policy Objectives	Yes	
	Cost/Benefits Information	N/A	
	Development status	Deployed elsewhere	
	Innovative	Yes	
	UK legal issues	N/A	
Summary:	Five different traffic forecasters or journey planners have been reviewed as part of this helpdesk query response, in Europe and North America. Each forecaster offers a variety of functions and services and are based on an assortment of different types of data sources. Forecasters such as the ones at the ASF and Mitrek sites offer planning functions that are focused towards providing a user friendly system to the public. There is also some research information available about some systems such as the NADICS and Jambayes with the latter being a commercial product.		

### Introduction

This document is provided in response to the above query regarding the state of the art in traffic/journey time forecasters. A number of website based forecasting tools have been reviewed. Examples are shown below:

### Autoroutes du Sud de la France (ASF)<sup>1</sup>

This free website uses source data from 13 different organisations. There are two main parts to the site, real time traffic conditions and traffic forecasts.

#### Real Time Traffic:

The map covers the whole of the French autoroute network.

Links are marked as either free flowing, heavy, congested, closed or are marked as having no information available. Incidents, accidents and closures are also marked with detail available in a tool-tip. Additional information and roadworks are also marked. The map is time-stamped to the nearest minute.

Journey times are available between some key locations in some areas. Some of these journey times also have a real time estimated journey time with them. Again, the time stamp is updated every minute.

#### Traffic Forecasts:

The traffic forecast allows the user to pick a date in the future. The user then clicks on a link which pops-up a histogram. The graph has a scale of the level of congestion for each hour of the day. The congestion scale is not tied to any quantitative figures, but it appears to be directly related to flow.

There is no information available on the site as to the sources of the data.

## Mitretek Trip Planner<sup>2</sup>

This prototype trip planner presents information for journeys around the Washington DC area.

The user enters their start and end point of the journey and their preferred arrival time. The software then predicts the journey time, but presents it as the necessary departure time. Three departure times are shown noting with each the proportionate chance of arriving before the preferred arrival time.

An example of the response is shown below:

You have selected a trip from I-66 at I-495, VA to Route 50 at I-495, MD arriving at 8:45 AM.  
Based on weekday travel over a 6-month period, **IF YOU LEAVE AT:**

7:55 AM, you have a 95% chance of  
arriving on-time

8:00 AM, you have a 75% chance of  
arriving on-time

8:05 AM, you have a 50% chance of  
arriving on-time

The average travel time for this trip is 40 minutes. There is a 25% chance that this trip may take more than 45 minutes. There is a 5% chance that this trip can take more than 50 minutes

It uses data collected from January and November 2002, excluding weekends and holidays and does not use real time data or allow for events.

The software only allows for predicted journey times between key junctions. The software finds the route with the lowest mean journey time and then works out the variations around that time.

RADAR TEAM COMMENT – This is an extremely quick and intuitive website to use.

## Beat-the-Traffic

Subscription required.

This service went live to the public in June 2005. It was reported as the first public traffic forecasting system that combines real-time traffic density and speed with historical trends. The system reports speeds on links in several US metropolitan areas in real time. It allows the user to define routes and gives current estimated journey time if the user departed now.

According to news articles, the system is able to account for seasonal variations, roadworks and even some sporting events. Apparently the system is also capable of forecasting the effect of incidents.

The annual subscription service also produces a journey time graph against time of day for each of the user's pre-defined routes. Journey times can be predicted up to a week in advance.

The system is used to provide traffic information to a local news station.

## Jambayes<sup>4,5,6</sup>

Microsoft research has developed a prototype traffic forecasting service for deployment on desktop and mobile devices. This prototype is in use by 2,500 Microsoft employees in Seattle. The predictive model it uses takes into consideration status and dynamics of traffic in the Greater Seattle area together with incident reports issues by Washington DoT, information about the occurrence of major sporting events, weather reports, time of day and calendar of information. The software uses an underlying Bayesian

statistical analysis model. The product is sufficiently developed to be commercially available via a company called Inrix.com (a Microsoft spin off company).

Services have been divided into real time, predictive and forecast.

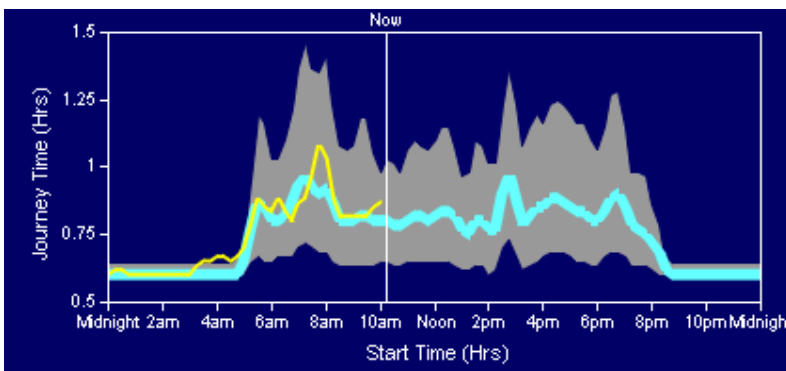
- Real time – covers the immediate traffic situation;
- Predictive – covers the near future situation; and
- Forecast – covers the longer term up to one year in the future.

Interestingly, with the predictive information, length of time for congestion to clear or congestion to start is presented. Several references are provided for this new product including a research report detailing how the modelling works.

### Traffic Scotland – Journey Time Planner<sup>7,8</sup>

The Traffic Scotland Journey Time Planner is provided by ITIS. The software uses historic flow profiles of floating vehicle data and maps these against current journey times.

The user selects their start and end city, the software then presents a journey time graph showing typical journey times for the day in question and variance to be expected. This appears to be roughly two standard deviations from the typical journey time. Overlaid on this is current journey time. An example is shown below:



Current and Normal journey time is shown as numbers as well. The user can select typical journey profiles for any day of the week and bank holidays.

An evaluation report for TEMPO is referenced in this document which provides details on the accuracy of the prediction algorithm.

### Summary

Five different traffic forecasters or journey planners have been reviewed as part of this helpdesk query response, in Europe and North America. Each forecaster offers a variety of functions and services and are based on an assortment of different types of data sources. Forecasters such as the ones at the ASF and Mitrek sites offer planning functions that are focused towards providing a user friendly system to the public. There is also some research information available about some systems such as the NADICS and Jambayes with the latter being a commercial product.

## References

- 1 Autoroutes du Sud de la France (ASF) <http://www.asf.fr/control/index.aspx?alias=home>
- 2 Mitretek Trip Planner <http://tripplanner.mitretek.org/>
- 3 Beat-the-Traffic <http://www.beatthetraffic.com/>
- 4 Jambayes [http://research.microsoft.com/~horvitz/horvitz\\_traffic\\_uai2005.pdf](http://research.microsoft.com/~horvitz/horvitz_traffic_uai2005.pdf)
- 5 Jambayes <http://www.inrix.com/solutions.asp>
- 6 Jambayes <http://www.inrix.com/pdf/TelematicsUpdateOct2005.pdf>
- 7 Traffic Scotland Journey Planner <http://scottishexecutive.itisholdings.com/>
- 8 NADICS journey time planner assessment from TEMPO  
[http://tempo.mdr.uk.com/EEG\\_ST4\\_NADICS\\_Journey\\_Time\\_Planner.pdf](http://tempo.mdr.uk.com/EEG_ST4_NADICS_Journey_Time_Planner.pdf)