INTEGRATED PUBLIC TRANSPORT INFORMATION SYSTEM FOR BAA SOUTHAMPTON AIRPORT
ITS FOR TRAVELLERS AND USERS – CONNECTED TRAVELLER SERVICES

Mr James L Mead*
Mott MacDonald, Stoneham Place, Stoneham Lane, Eastleigh, Hampshire, SO50 9NW, UK
James.mead@mottmac.com
+44 (0)23 80628989

Mr David Lees
Southampton International Airport, Southampton, Hampshire, SO18 2NL, UK
david_lees@baa.com
+44 (0)23 80627073

ABSTRACT
As a general rule, travellers require information quickly, in an easy to digest format and presented in a design and approach that allows them to quickly assimilate the information they require. To meet this objective, BAA Southampton Airport and Mott MacDonald have designed and implemented a number of travel information display screens, providing real time traffic and travel information on road, bus and rail services for passengers arriving at Southampton Airport. This information is displayed on dedicated LCD panels throughout the passenger arrivals area at the airport.

KEYWORDS
INTRODUCTION

Every day, every hour, every minute travellers pass through Southampton Airport as part of their overall journey from one destination to another. Once arriving at the airport, these travellers have an on-going requirement to know what the current status is of the local train, bus and road network in order to be able to continue with their onward journey. Southampton Airport’s answer is to provide their passengers with the multi-modal real-time travel information that they need to complete their journey within minutes of stepping off the airplane. To meet this objective, Mott MacDonald, on behalf of BAA, have designed and implemented a travel information display system providing real time traffic and travel information on road, bus and rail services for passengers arriving at Southampton Airport, one of the busiest regional airports in the UK and a transport hub for the south of England.

This paper will explore the challenges faced by public transport interchanges in blending data from multiple sources to provide integrated real-time traffic and travel information to influence traveller modal choice. The resulting design allows passengers to view a continuous, live overview of the status of local transport systems whilst being a good example of how low-cost technology can be deployed to significantly improve a public service. The technology deployed saves costs by building on existing integrated systems used for collating and monitoring traffic and transport data. Information is then drawn from these disparate sources so the challenge was to design the system to interrogate and integrate all the existing separate travel systems and find a way of presenting this data in an easily understood, centralised format at the airport.

COLLATING INFORMATION

Information providers

The travel and transport information system obtains real time traffic and travel information from the Highways Agency, Southampton City Council, Hampshire County Council, South West Trains / Association of Train Operating Companies and Red Funnel Ferries, as well as displaying timetable information for all local bus services and live CCTV images for the local motorway network. This is presented via an in-house
application which displays all the information to travellers in an easily understood and aesthetically pleasing display, whilst at the same time meeting Southampton Airport’s marketing and operational requirements.

Software interface with information providers
Gaining access to all the data required from the data providers was challenging, with different providers each having their own data format and schema that the project team had to interface with. The project team had to manipulate that data to ensure compatibility with the system to display real time information to passengers on transport conditions.

With the progression towards public transport information being available widely over the internet, the project team have used standard modern Internet processes to transfer the information from the data providers to the travel display system. Essentially, the system acts as a real-time travel information nexus, automatically and continuously gathering data from remote data sources of travel information using standard communications protocols such as XML (eXtensible Markup Language) and Internet protocols such as SOAP (Simple Object Access Protocol). This data is then automatically formatted into a defined standard XML format by our adapter software written in Java.

Data manipulation
This adapter software, written in-house in Java, polls the individual data providers’ servers across the internet to obtain the information pertaining to current and future departures from Southampton Airport. For example, to obtain real-time rail information relevant to the Southampton Airport Parkway rail station, the system server receives an XML feed using the SOAP protocol from the UK Association of Train Operating Companies (ATOC), which contains the current departure times, delays (if any), platform and train operator information. This XML data is then read by our in-house developed Adobe Flex application and used to populate the rail section of the presentation across all the screens in the airport.
PRESENTING THE DATA

Software
The Adobe Flex application that has processed the data then imports the formatted XML into a presentation format created to match with BAA Southampton’s “Breeze Through” marketing campaign and then Adobe Flash is used to present this.

This level of complete customisation is useful to ensure that passengers through the transport hub are given information in the same format throughout. If passengers are given information in a variety of presentation styles and formats throughout their progress through the hub, then the passengers constantly have to adapt to being given information in a variety of styles. This can lead to passenger confusion and frustration, especially when dealing with time critical modes, such as rail departures; as there is nothing worse than missing a train because you did not understand the information presented to you.

Hardware
All the hardware used to drive the travel system is standard ‘off the shelf’ equipment and so the project benefited from the cost savings associated with using mass-produced hardware.

All the data manipulation and processing is achieved by a standard HP Proliant G5 server running Windows Server 2003 64bit, which is connected to the internet using a standard business ADSL broadband connection with a guaranteed high availability and uptime. Naturally, as the system is using the internet to connect to the data providers, adequate security measures need to be taken to prevent unauthorised access to the system.

Once the data has been manipulated and formatted into the travel information presentation on the server it is ready to be pulled by the client PC. This client PC then
renders the Adobe Flash application for display at each location. To keep costs down, there is not a PC located at each presentation screen and instead the client PC feeds the video signal over CAT5 network cable to each of the high definition LCD displays located throughout the airport terminal. These LCD displays are located above the baggage reclaim belts, as well as throughout the arrivals hall. This ensures passengers have sight of the displays whilst they are waiting for their baggage, thus giving them ample time to digest the information being provided and the consequences to their onward travel if there are delays or incidents. To back up the screens, there are also airport ambassadors available to help passengers with any issues throughout the arrivals area. Figure 1 below shows the network architecture of the system.

**Figure 1:** Network architecture of system

**WHY A PASSIVE DISPLAY IS BETTER FOR PASSENGERS**

The real-time information needs to be delivered to travellers quickly and in an easily understood and widely accessible format whilst they undertake other tasks such as collecting baggage or taking refreshment. For Southampton Airport, this has dictated against using a communication medium that requires active participation by travellers,
such as kiosks. Therefore, by utilising large format LCD screens at key locations where
passengers are carrying out these other tasks, they can be fed live information on train
departures, bus movements and local traffic congestion.

Kiosks require users to physically interface with them to extract the information they
need for their onward journey. For example, if the passenger wants to go from their
current location to their intended destination, then they must input all their details,
search for the correct route and then get the result. They then may or may not have the
opportunity to see if their intended mode of transport is running to time, or is subject to
delays. This delay information is often all that people are after. There are also speed
lags with kiosks, as they often are not very quick to retrieve the information you require.
Kiosks are certainly a lot slower than just glancing up at the screen and seeing the live
departure information.

Feedback from displays
The Southampton Airport Ambassadors have been collecting informal feedback from
customers, observing the number of passengers who use the displays and by
questioning these users to establish their opinions of the system. To date the
ambassadors have reported that passengers are very appreciative of the information on
the displays, as it helps remove some of the stress associated with making a transport
connection. Passengers were pleased by the fact that they could see the next five
departures from the rail station located at the airport, as this made them feel relaxed to
see there were a selection of trains available to them. This is also true about the real
time traffic information, as passengers were pleased to know they should not be delayed
on their way to their destination. Or, if there were an incident on the motorway, that they
knew to expect congestion. An example page from the travel information system is
shown below in Figure 2.
Following the initial informal feedback from the ambassadors, a more formal feedback survey will be undertaken shortly to document the benefits the system is bringing to passengers travelling through Southampton Airport.

CONCLUSION

With the progression of real-time information being available over the internet, it has become a reality for systems such as this to exist and, most importantly, be cost effective.

Providing real-time information on the state of the public transport and road network in the locality of transport hubs, such as Southampton Airport, makes it easier for passengers to make informed choices and be better prepared. By deploying this real-time travel information system, BAA and Mott MacDonald have given passengers the information they need to complete their journey.