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DSE® 2011 Gold Apex Award - Transportation: Destination Shuttle Services

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published: 05/04/2011

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NOMINEE: Destination Shuttle Services, Los Angeles, Calif.
NOMINATING COMPANY: Omnivex, Concord, Ontario, Canada
CATEGORY: Transportation

PROJECT: Destination Shuttle Services and Omnivex deployed a digital signage network throughout 32 buses and 13 hotels within the LAX area to inform and engage both departing and arriving guests with relevant hotel and airport details, as well as with advertisements.

OVERVIEW

The City of Los Angeles was looking for a trip-reduction solution to and from LAX airport that would not only reduce congestion and emissions, but be efficient and convenient for passengers while assuring a quality experience. Destination Shuttle Services (DSS) responded by creating Shuttle Smart, a first-of-its-kind private "green" transit system in Los Angeles. This system consolidates the airport shuttle services of 13 individual hotel properties in the LAX area. The consolidated services have reduced 55 percent of hotel shuttle trips through LAX, eliminating more than 100,000 hours of idling buses and more than 6.6 million pounds of carbon dioxide each year, thus reducing pollution and supporting a healthier environment.



The goal of the system is to extend the guest's experience at the hotel all the way to the curb at the airport. Through the use of Omnivex GPLink, DSS can provide their passengers with location-based content on the moving buses.

DSS now provides hotel shuttle services to more than 2.5 million people annually both to and from LAX and the surrounding hotels.

The company wanted a way to effectively communicate with their passengers, welcoming them to town when they arrived and thanking them for their visit when they departed. They decided that digital signage located on their buses would be a great way to extend the hospitality experience from the hotel to the airport. By incorporating digital signage in the 13 partner hotel lobbies in addition to on the buses, DSS would have a way to communicate important information to passengers as they waited for the bus.

The deployment includes 32-inch LCD screens positioned inside the buses. The deployment also incorporates the LED signage that already existed on the outside of the buses, as well as audio announcements. In addition, there are touch screens located in the lobbies of Destination Shuttle Services' partner hotels in the LAX area. In total, the network is comprised of 32 buses and 13 hotels.

The digital signage deployment runs on Microsoft's newest operating system, Windows 7, which was selected because it is the only operating system that features location-based services, which were crucial in enabling Omnivex to deliver the GPS-triggered content.

Omnivex Moxie software with Omnivex GPLink is the content management system powering the digital signage. Omnivex's software has the ability to know exactly where each bus is, allowing it to provide intelligent content on the buses based on this knowledge. In addition, the software provides useful information such as the capacity of the bus and how regularly they are coming so that DSS can monitor the buses. In DSS' operations center, the network operator can see the position and status of all the buses, which helps them to improve the service they deliver to their customers. The software also integrates with their other functions, such as audio announcements on the bus and the LEDs on the outside of the bus, so that they can manage everything with one system, from one place.

OBJECTIVES

The system aims to enhance the hospitality experience by providing passengers with relevant travel, hotel and city information both on the buses and within the hotels. The goal of the system is to extend the guest's experience at the hotel all the way to the curb at the airport. Through the use of Omnivex GPLink, DSS can provide their passengers with location-based content on the moving buses. By linking the digital signage on the buses with interactive kiosks in the hotels, the whole journey becomes part of the hotel experience. The kiosks tell hotel guests where their next bus is and how long it will be before it arrives. Lastly, DSS now knows exactly where each bus is in real time, so dispatchers can ensure that the buses are servicing the routes that are the busiest at any given time, which results in more satisfied customers.

Omnivex wanted to provide customers with an effective tool to successfully implement location based digital signage. By creating a system which allows customers to set up routes and zones on a map, identify points of interest, and then tag their content with metadata, the digital signage manages itself - no matter where the buses are traveling. In addition, the Omnivex software integrates other periphery systems, such as audio and LED signage on the outside of the bus. Not to mention that the Omnivex system allows customers to manage other aspects of their fleet, such as fuel consumption, location, speed, etc. Leveraging the power of Windows 7, Bing Maps and Omnivex Moxie, Omnivex was able to extend digital signage to new markets and improve the customer service experience.

Each bus has a Windows-based PC running Windows 7 and Omnivex software, as well as a GPS bud. Using Omnivex Moxie software and Microsoft Windows 7 location-based services, GPS coordinates sent via a 3G network to the server in real-time indicate the current location of the bus. Omnivex GPLink is used to combine this information with intelligent rules to determine the most appropriate content to display based on the current location of the bus (e.g., whether the shuttle is carrying arriving or departing passengers).

Furthermore, inside the hotels a kiosk also running on this software delivers interactive content and information for hotel guests. Omnivex GPLink delivers information which the Omnivex Moxie software uses to display the location of the shuttles on a map along with the estimated time of arrival of the next bus at the hotel.

CHALLENGES

There were many challenges associated with this project and below is just a sampling of them:

1. The first big issue to address had to do with network connectivity; how would DSS get Internet access on the bus? How would it communicate back to the server at Destination Shuttle Service's office? What would happen if the bus lost the Internet connection?
2. Since the system needed to be fully dynamic with content on the screens changing based on the location of the buses, Omnivex had to work with Microsoft to develop a new software product that would utilize the power of Windows 7 location-based services. Now Omnivex had to figure out where the data for the digital signage would come from and how the company could determine which route each bus is traveling on. How would DSS know whether a bus was carrying arriving or departing passengers? Also, how would DSS and Omnivex define which routes would get which content?
3. Next, Omnivex had to figure out where and how to mount the screens on each bus, as well as where to mount the PCs. The screens had to be visible from all seats inside the bus. There was the added problem of how to cable them. It was decided that they would be mounted between two existing poles on the bus and that the PC would be mounted to the back of the plexi glass that the screen is mounted against, so it is in a secure place.
4. Another issue was that Omnivex had to determine whether or not there would be enough power generated on the bus to power both the screen and the PC. The wiring on the bus had to be changed, as it was not the proper voltage. The company also needed to determine how to ensure that the PCs would shut down safely after a bus was turned off, instead of the PC being "killed" each time the buses are turned off.



By linking the digital signage on the buses with interactive kiosks in the hotels, the whole journey becomes part of the hotel experience. The kiosks tell hotel guests where their next bus is and how long it will be before it arrives.

To solve the first issue, Omnivex decided to use a 3G wireless cellular connection. Since Omnivex works on a store and forward model, all of the content is pushed out to the player PCs on the network and then only the information that changes needs to be updated (so it utilizes less bandwidth). This also meant that if the PC on the bus lost connection to the Internet, it would still have information displayed on the screens. To ensure relevant content continues to play based on the current location, the company installed a data proxy on the bus. The player on the bus connects to the data proxy, which in turn connects to the server at DSS. If the bus loses the Internet, it continues to run based on the local proxy, as the GPS coordinates are still updated there and the regional content can flip based on data in the proxy.

To solve the second issue, Omnivex software developers worked through all of the challenges to come up with a software system that would successfully address all of the requirements of the system. Regions and routes were developed in an administration client back at DSS which allows the dispatch unit to fully monitor where each of its buses are. Points of interest were also identified to trigger content to play as the bus entered particular pre-defined zones.

For the third issue, though there was an existing GPS unit on each of the buses, it was not very sophisticated and was extremely large and cumbersome. DSS decided that they would remove all of these GPS units from their fleet and instead use a small GPS bud which connects easily to the PC using a USB that is about the size of a thumb drive, yet is very accurate and reliable. Omnivex developed a service to read the data being sent from the GPS hub and write that data back to the servers.

To solve the fourth issue, Omnivex installed a power inverter, grounded it and wired it to the battery to generate 1500w of power on the bus. The company worked with iBase to install a watchdog adapter inside the PC which, when bus turns off, allows the PC to go onto battery. It detects that there is no power coming through and is able to safely power down the PC.

As for the screens on the buses, they are divided into three parts: A third is dedicated to hotel information, another third to airport information and the last third to advertising. The whole mix of content provides passengers with exactly that they need to know to get around in the area. The screens inside the shuttles show information appropriate to travelers based on whether the shuttle is carrying arriving or departing passengers. For example, as the bus approaches the terminal, content on the screens includes advertisements about the shops and services within that terminal, which airlines use the terminal and even flight information such as security warnings or delays. On shuttles that are carrying arriving passengers, the screens display advertising for local attractions, restaurants and other points of interest, as well as hotel information, promotions and features.

Inside the hotels, large touch screens running Omnivex Moxie software deliver interactive content and information for hotel guests. Omnivex GPLink delivers the information to Omnivex Moxie to display the locations of the shuttles in the area on a map, along with the estimated wait times before the next shuttle arrives at the hotel. The content also includes information such as flight departure status and advertising about local sites and attractions.

Back at Destination Shuttle Service's operations center, Omnivex software displays the position and status of all Shuttle Smart buses for the network operator. This provides DSS with the ability to communicate with the drivers and redirect them if they see that the buses are not evenly distributed or if one route happens to be busier than another at a particular time.

Lastly, Omnivex software integrates with the other systems on the buses, such as the audio announcements (e.g., "To your right, you will see XYZ Steakhouse" or "Next stop, Hilton LAX") and LED signage on the outside of the bus. Content on the screens within the bus also corresponds with the audio messages (e.g., with the steakhouse example above, the content on the screens would include XYZ's advertisement). Now, the system is automated and managed through one integrated solution provided by Omnivex.

RESULTS

DSS wanted to deploy cutting-edge technology that would set them apart. A lot of the travelers to Los Angeles International Airport are very well-traveled, so DSS and Omnivex wanted to deliver a new solution that they haven't seen anywhere else in the world. Most people don't think of buses as being a very sophisticated industry, so DSS wanted to use the latest technology to counteract this.

The network is mainly intended to deliver better customer service. There are 7,000 hotel rooms in total, which tells you the size of the audience who will see the content: It's around 2.5 million people a year.

Although it is not an advertising-driven network, the advertising revenue is an additional benefit of the system (although the network is not reliant on this to justify itself).

Feedback about the system had been extremely positive from customers and the hotels themselves, but DSS felt that it was important to have an independent third-party group complete a satisfaction survey with their customers. DSS underwent a two week satisfaction survey and "secret shopper" session to measure the satisfaction with the system.

Following the survey completion and "secret shopper" sessions, it was determined that there is a 94 percent satisfaction rate with the digital signage system.

DSS reports that advertisers are fighting to get on its network. The advertising works because it is proximity advertising, and there is a very interested and captive audience. All of the initial advertisers have continued to be repeat clients as well, DSS reports. This means that the advertisers themselves are happy with the value that the network is providing them.

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