RITA Office of Research, Development, and Technology

UTC Spotlight

University Transportation Centers Program

This month: University of Washington | November 2010

University of Washington Students Create 'OneBusAway' Program To Encourage Public Transportation

Improving the experience of the rider is key to convincing customers to trade the comfort and convenience of their own vehicles for the economic and environmental advantages of public transit. At the University of Washington, students have come a long way toward attaining this goal by developing OneBusAway—a real-time transit information system available for free in a variety of formats: web, phone, SMS texting, Android, and iPhone. OneBusAway provides real-time transit information for Metro Transit, Pierce Transit, Sound Transit, and Washington State Ferries (www.onebusaway.org).

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Sample real-time tracker output on iPhone.

Because over 91% of Americans use cell phones, developing tools for riders on the go made sense to the creators of OneBusAway, and the launch of the iPhone application in September of 2009 and subsequent adaptation to other formats popularized the system in the Seattle area. The number of devoted users continues to grow; to date, there are approximately 30,000 unique users a week and more than 50,000 downloads of the iPhone application. While the GPS technology that enables real-time transit reporting is expensive to install, it is hoped that the long-term benefits of empowering riders with information will improve transit by increasing ridership and, ultimately, support for public transportation.

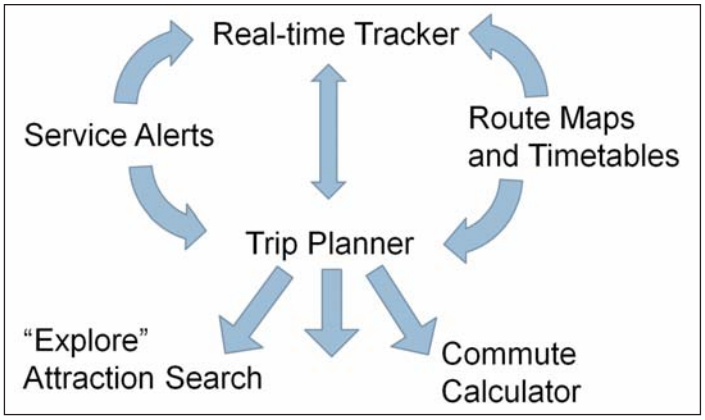
Using Mobile and Web Application Tools To Empower Bus Riders

For bus systems, which nationally make up over 53% of all public transportation, issues such as safety of the bus stop area, navigational confusion, lack of real-time arrival information, and convenience are primary reasons some potential riders do not use public transit. Overcoming these obstacles became the premise for the development of OneBusAway; key features include:

- real-time arrival and departure information for public transit;
- map display of stops and routes;
- nearby stops search for location-aware devices;
- bookmarks and recent stop history;
- search for stops by route, address, and stop number;
- explore tool that makes it easier to search for nearby restaurants, parks, shopping, and other locations easily accessible by public transit; and
- integrated reporting system that allows users to notify the transit agency if there is a problem with the bus, bus stop, or inaccuracies with the real-time transit information.

OneBusAway—An Award Winning Technology

In March 2010, the Washington Technology Industry Association announced that OneBusAway won the award for "Best Use of Technology in the Government, Non-profit or Educational Sector" and has been featured in *The Seattle Times*, *The Stranger*, and the *Seattle Transit Blog*. In addition, "OneBusAway: Results from Providing Real-Time Arrival Information for Public Transit" was a best paper nominee at CHI 2010 (Association for Computing Machinery Conference on Human Factors in Computing Systems).



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Components of OneBusAway.

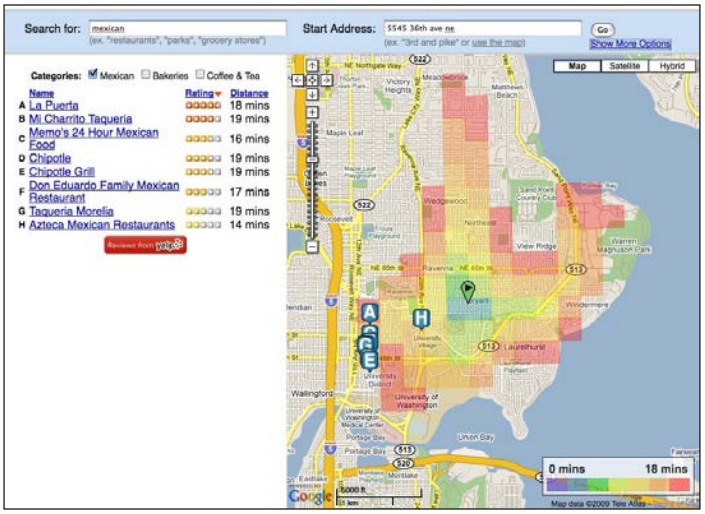
Improved Rider Satisfaction

The initial online survey had 488 Seattle-based participants. Preliminary results have been promising with the majority of users reporting that their overall satisfaction with public transit improved:

- 91% reported that they spent less time waiting for a bus to arrive.
- 21% felt safer while waiting since they were able to wait less time in an area they felt was unsafe or were able to easily find a different stop location altogether.
- 78% of riders reported an increase in walking. A common reason given was that because they knew precisely when their bus would arrive or could easily change their routes, they had more time to explore and exercise along the way.
- Approximately 30% of users reported an increase in noncommute (choice) trips.

Future of OneBusAway and Transit Information Systems

Because transit information systems are often developed in-house or by private contractors, the resulting system is typically tailored to and owned by a particular transit agency. As a result, some transit agencies inadvertently "reinvent the wheel" with respect to developing traveler information systems. With this in mind, OneBusAway is open-sourced software licensed under Apache 2.0; the creators hope that other transit systems and researchers will continue the development and spread the impact. OneBusAway creators envision the system not only as a transportation tool, but also a source of research data to help transportation professionals "evaluate what works and what doesn't." Moreover, they see it as a way to implement positive social and environmental change.



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Explore attractions search tool search of Mexican restaurants within 20 minutes by transit from user's home.

About This Project

OneBusAway is the creation of two University of Washington students—Kari Watkins, a Ph.D. student in Civil and Environmental Engineering (CEE) and member of Transportation Northwest's (UTC Region X) Advanced Institute, and Brian Ferris, a Ph.D. student in Computer Science and Engineering (CSE); both plan to graduate in June of 2011. Kari Watkins was the recipient of a USDOT Eisenhower Fellowship, which also contributed to this project. Advisors and co-contributors to the project at the University of Washington are: Scott Rutherford (Civil & Environmental Engineering CEE), Alan Borning (Computer Science & Engineering), Dieter Fox (Computer Science & Engineering), and David Layton (Evans School of Public Affairs). OneBusAway is funded by grants from the National Science Foundation (grant IIS-0705898), Nokia Research, and Google. Additional financial support comes from TransNow and The Bullitt Foundation. Visit www.onebusaway.org for details , updates, and research.