Mobile Device Technology for Real-Time Transit Information: Use and Deployment

Carol L. Schweiger, Vice President

T3 Webinar
April 10, 2012
Presentation Outline

- Introduction
- Literature Review
- Characteristics of Underlying Technology, Mobile Technology and Mobile Information
- Contribution of Mobile Messaging to Agency Communications Strategy
- Selected Case Studies
- Findings, Lessons Learned and Conclusions
Introduction

- Dimensions of use and deployment of real-time transit information on mobile devices:
  - Underlying technology required to generate information disseminated on mobile devices
  - Mobile technology used for information dissemination
  - Characteristics of the information
  - Resources required to successfully deploy information
  - Contribution of mobile messaging to agency communications strategy

- Survey included dimensions and lessons learned

- Interviews with key personnel at agencies that have exemplary approaches to providing mobile information
Literature Review

- Underlying technologies well understood
- Characteristics of mobile technology must be considered including:
  - Mobile messaging reliability and usability
  - Handset display dimensions
  - Memory and processing speed
  - Access to communications networks
- Deployment growing in U.S., but more deployment in Europe and Asia. However, “open data” more prevalent in U.S.
- Using mobile phone location and social networking is revolutionizing real-time information on mobile devices
Underlying Technology and Real-time Mobile Message Types

- Most prevalent underlying technologies:
  - Real-time arrival prediction software (89%)
  - Automatic vehicle location (AVL) (82%)
  - Computer-aided dispatch (CAD) (64%)
  - Two-way messaging capability (57%)
  - Alert subscription system (46%)
  - Schedule adherence functionality (46%)
  - On-board data communication system (39%)
- Wide variation in types of real time information and frequency with which it is updated
- Very few conducted study to determine deployment
Mobile Technology

- Mobile alerts
- Mobile tagging (e.g., Microsoft Tag)
- Near-field communications (NFC)
- Location-based services (LBS)
- Smartphone applications...
- Smartphone applications...
- Mobile web/Internet
- Two-way messaging (e.g., SMS)
Characteristics of Real-time Information

- Similar formatting for SMS messages
- Mobile websites vary depending on how phone or smartphone screen real estate utilized
- Formats of third-party mobile applications vary greatly
- Selection of push vs. pull depends on use of information and customer’s location in “trip chain” when accessing information
- Wide variety of standards:
  - Specific transit information
  - Formatting of the information
- Limited number of respondents monitor reliability and accuracy
12 have communications strategy – 8 of 12 provide real-time information via mobile devices as part of that strategy
8 consider “information equity” when choosing specific media/channels
13 consider providing real-time information on mobile devices as a way to attract “choice” riders
7 developed marketing campaign
Agencies’ viewpoints regarding pursuing advertising revenue though mobile content were varied

<table>
<thead>
<tr>
<th>Time</th>
<th>Route</th>
<th>Board at</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 min</td>
<td>MAX Blue Line to Hillsboro</td>
<td>Pioneer Square North MAX Station</td>
</tr>
<tr>
<td>9 min</td>
<td>MAX Red Line to Airport</td>
<td>Pioneer Square South MAX Station</td>
</tr>
<tr>
<td>15 min</td>
<td>MAX Red Line to City Center &amp; Beaverton TC</td>
<td>Pioneer Square North MAX Station</td>
</tr>
<tr>
<td>19 min</td>
<td>MAX Blue Line to Gresham</td>
<td>Pioneer Square South MAX Station</td>
</tr>
<tr>
<td>23 min</td>
<td>MAX Blue Line to Hillsboro</td>
<td>Pioneer Square North MAX Station</td>
</tr>
<tr>
<td>24 min</td>
<td>MAX Red Line to Airport</td>
<td>Pioneer Square South MAX Station</td>
</tr>
<tr>
<td>36 min</td>
<td>MAX Blue Line to Gresham</td>
<td>Pioneer Square South MAX Station</td>
</tr>
</tbody>
</table>
Case Studies

- Tri-County Metropolitan Transportation District of Oregon (TriMet) (Portland, OR)
- Bay Area Rapid Transit District (BART) (Oakland, CA)
- Transport for London (TfL) (London, United Kingdom)
- LeeTran (Lee County/Ft. Myers, FL)
Just prior to opening data, recognition that third-party developers could create innovative mobile applications at no cost to TriMet

Created developer’s website, recognizing value of both “good” data and developers of mobile applications

Resources include:

- Schedule published in General Transit Feed Specification (GTFS) format
- Web services from TriMet's TransitTracker and trip planner systems

Developers of TriMet mobile applications must register

44 third-party applications developed for TriMet, 30 of which are for mobile devices
Transport for London (TfL)

- Prior to June 2010, real-time information on mobile devices was limited to travel alerts
- Conducted demonstrations to test potential of mobile applications using real-time information:
  - Examine content that TfL already had and how it could be disseminated
  - Examine form or format in which content should be presented
  - Assess usefulness of providing content
  - Determine feasibility of developing such applications
- No funding to deploy most promising demonstrated applications
- Opened data in June 2010, resulting in new relationships between open data community and TfL/London’s DataStore
Findings

- Growing trend toward deploying this technology for any size agency
- Using third-party to develop real-time applications and provide real-time information on mobile devices is overwhelmingly the approach that transit agencies are taking
- Costs are not well understood and discussed in a very limited way in the literature and survey responses
- Overall lessons learned shown on following slide
Lessons Learned

- Executive or Board sponsor is critical
- Architecture with central source of all real-time information recommended
- Source data needs to be verified thoroughly for reliability and accuracy
- Collecting usage statistics is important
- Useful to test on Internet first, then deploy on mobile website
- One service provider
- Strong relationships with communication providers and mobile device suppliers are critical
- “One customer” approach with one application very important driver
Conclusions

- Agency’s ability to develop, manage and maintain mobile applications in-house or manage 3rd application development and services critical
- Very strong relationship necessary between open data approach and resources
- Mobile devices more prevalent than use of other more traditional dissemination media
- Not all existing and potential customers will have mobile devices, and not all applications will satisfy needs of all customers
- Personalization of information critical to success of providing information on mobile devices
Thank You!

For additional information:

Carol Schweiger, Vice President
TranSystems Corporation
Phone: +1 857-453-5511
E-mail: clschweiger@transystems.com