MOBILE FARE PAYMENT SYSTEM DEPLOYMENT

Lessons Learned and Concept of Operations

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Acknowledgement

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Coming up

- Why Mobile Ticketing?
- Industry Scan of Mobile Fare Technology
- Summary of Features by Different Vendors
- Case Examples: Lessons Learned from interviews with 5 agencies
- Concept of Operations & More
- Next Steps for the Pilot at StarMetro
Why mobile fare technology?

“Technologies in fare systems have far exceeded our current system. We want to make sure we are entering into a system that will allow us the maximum flexibility in fare collection and provided convenience to our patrons.”
Mobile Fare Payments

1. Visually verified electronic “ticket” on phone
3. Both #1 and #2
Transit Mobile Fare Payments

Near Field Communication (NFC) – contactless, tap and go

Photos taken by Nevine at Demo by Access-IS, 2016 APTA Fare Conference
<table>
<thead>
<tr>
<th>Vendor</th>
<th>Deployments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bytemark, New York, NY</td>
<td>• New York Waterway (NYPP app);</td>
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<td></td>
<td>• Capital Metro in Austin, Texas (CapMetro app);</td>
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<td></td>
<td>• Massachusetts DOT (BusPLus+)</td>
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<td>GlobeSherpa, Portland, OR</td>
<td>• TriMet in Portland (TriMet Tickets);</td>
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<td></td>
<td>• Virginia Railway Express (VRE Mobile);</td>
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<td></td>
<td>• Pilot program with Los Angeles DOT (LA Mobile);</td>
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<td></td>
<td>• Planned with SFMTA;</td>
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<td></td>
<td>• Partnering with Cubic for CTA Ventra App in Chicago</td>
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<tr>
<td></td>
<td>• Dallas Area Rapid Transit (DART) with Fort Worth (The T) and Denton County Transportation Authority (GoPass)</td>
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<td>Vendor</td>
<td>Deployments</td>
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<tr>
<td>Passport, Charlotte, NC</td>
<td>• Columbia, SC Comet Bus (Catch the Comet)</td>
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<td></td>
<td>• Jacksonville Transportation Authority (MyJTA), FL</td>
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<tr>
<td>CooCoo, New York, NY</td>
<td>• CDTA in Albany (iRide);</td>
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<td></td>
<td>• NCTD in San Diego (mTicket)</td>
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<tr>
<td>Masabi, London, UK</td>
<td>• Boston’s MBTA (mTicket);</td>
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<td></td>
<td>• San Diego's MTS and CrossCountry Trains (mTicket);</td>
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<tr>
<td></td>
<td>• NICE Bus on Long Island (go Mobile);</td>
</tr>
<tr>
<td></td>
<td>• Under contract with New York’s MTA for Metro-North and Long Island Railroad</td>
</tr>
<tr>
<td>Xerox, Norwalk, CT</td>
<td>• NJ TRANSIT (MyTix)</td>
</tr>
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<td></td>
<td>• SunRail in Central Florida</td>
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Case Examples: Interviews

1. DART (Unwire): Lawrence Sutton, PMP (previously DART’s Mobile Fare PM), PM – Technology Services, Transit and Rail, CH2M
2. NICE (Masabi): Omar Alvarado, Senior Planning Analyst
3. COMET (Passport): Samuel Scheib, Transit planner and manager
4. CTA (GlobeSherpa): Michael Gwinn, Director, Revenue and Fare Systems
5. NJ Transit (Xerox): Frank Gorman, Manager, Point of Sale & Fare Collection Systems
<table>
<thead>
<tr>
<th>Agency</th>
<th>NJ TRANSIT</th>
<th>MBTA</th>
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</thead>
<tbody>
<tr>
<td>Name of App</td>
<td>NJ TRANSIT App (MyTix)</td>
<td>mTicket (JustRide)</td>
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<tr>
<td>Validation Process</td>
<td>Visual; barcodes scanned at a small number of fare gates</td>
<td>Visual; barcode scanned by inspector</td>
</tr>
<tr>
<td>Modes with app</td>
<td>Bus, rail, light rail</td>
<td>Commuter rail and ferry</td>
</tr>
<tr>
<td>Forms of Payment</td>
<td>Credit and debit cards; PayPal</td>
<td>Credit and debit cards</td>
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<tr>
<td>Agency</td>
<td>NCTD</td>
<td>The COMET</td>
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<tr>
<td>Name of App</td>
<td>COASTER</td>
<td>Catch the COMET</td>
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<tr>
<td>Validation Process</td>
<td>Visual and barcode</td>
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Lessons Learned from Case Examples

• Significant planning and technical expertise is necessary – use lessons learned
• Build redundancy in back office functions /servers in case of interruptions in communications
• Carefully evaluate the desired data (e.g. utilization by route and stop) and reporting needs when defining technology - should be factored into procurement
Lessons Learned from Case Examples

• Mobile ticketing requires extensive marketing activities to be successful
• Agencies should build customer outreach activities into their planning activities and deployment budgets
• Engage all levels of transit agency employees in the planning process in preparation for deployment.
• Employees involved in beta testing have valuable insight.
Lessons Learned from Case Examples

• Have a good dashboard system to track sales trends and system performance

• Beta Test - represent a good cross section of transit service area demographics of users of the specific modes where mobile payments can be used, also solicit input during and after pilot
Concept of Operations & More

• Concept of operations
  • **Customer-facing Mobile Ticketing Application**
  • Additional Mobile Ticketing App Features
  • Fare Inspector Application
  • Reporting and Backend System
  • Financial Processing
• Estimated Project Timeline
• Roles and Responsibilities
Customer-facing Mobile Ticketing App will

1. Allow customers to download and install a mobile application (mobile “app”) on their smartphone
2. Create an account through a one-time setup process that prompts users for billing information (e.g., credit cards, debit cards or other electronic payment)
3. Be able to login using an ID and password and be greeted with the home screen of the mobile app
Customer-facing Mobile Ticketing App

4. On the home screen, the user will
   • see the name of the transit agency,
   • be directed to a page that allows them to purchase fare products,
   • be able to purchase multiple fare products at once, and
   • maintain multiple fare products attached to their account and accessible for use within the mobile app
Customer-facing Mobile Ticketing App

5. At the time of travel, customers will launch the mobile app, select the fare product they wish to use, and then activate the ticket

• Activation of the ticket should be able to occur in an offline mode (i.e., Internet/network access is not necessary to activate the ticket).
Customer-facing Mobile Ticketing App

6. After activation, the mobile ticket will provide a visual indicator to show to the driver for a set period of time for which the ticket is valid
Customer-facing Mobile Ticketing App

7. An activated mobile ticket presented in two configurations: a) a visually validated ticket and b) a barcode / QR code.
   
a) The visually validated ticket will have an interface that enables drivers to easily identify a valid ticket, AND should include anti-tampering features that would prevent users from fraudulently using images or videos of invalid tickets as a valid proof-of-payment.

b) The barcode / QR code ticket can be validated by having the fare inspector scan it using a “fare inspector mobile application”.
Customer-facing Mobile Ticketing App

8. All mobile tickets will include a high security image with anti-tampering features, a barcode / QR Code, transit agency logo, validity period, and the fare type.

9. After a set period, the activated mobile ticket will expire and will no longer be available
   • Expired tickets should be easily visually distinguishable from valid tickets.
   • The customer will be able to view a history of purchased and expired mobile tickets.
Customer-facing Mobile Ticketing App

10. At any time during the use of the mobile app, the customer can access a “help” page with frequently asked questions (FAQs) about mobile ticketing.
Additional Apps

• Trip planning functionality using transit schedule information;
• Real-time vehicle tracking and estimated vehicle arrival information;
• Ability to access ride-sharing services (such as Uber or Lyft);
• Security reporting, such as “see something, say something” functionality to report suspicious behavior; and/or
• General feedback / non-emergency issue reporting (e.g., for broken benches or bus drivers compliments and/or complaints).
Fare Inspector App (validator)

App will automatically report to a backend system the following information about validated tickets:

- Date and time of validation;
- Date and time of ticket purchase;
- Date and time of ticket activation;
- Location;
- Inspector ID number;
- Fare type; and
- Customer account ID number.
Reporting and Backend System

The developer will provide a web-based tool for use by transit agency staff including:

- Access to records of all customer transactions using mobile ticketing, including all ticket purchases, validation, and activation, as well as the ability to export these records to a machine-readable data format such as Comma-Separated Values (CSV) files that could be viewed and analyzed in another application (e.g., Microsoft Excel);
- Electronic reports summarizing daily, weekly, and monthly sales
- A mechanism for reimbursing customer mobile tickets; and
- A mechanism for receiving questions and comments from customers (i.e., “Contact Us”).
Financial Processing

The mobile ticketing system will have the following financial functionality:

• The system will accept MasterCard, Visa, debit cards and PayPal payments;
• The developer will be responsible for all back office functions;
• The developer will comply with the latest Payment Card Industry (PCI) data security standards, including all audit and compliance certification activities; and
• The developer will deposit fare revenues (minus applicable fees and taxes) into the transit agency bank account on a regular basis (with the specific dates / frequency to be agreed upon).
Estimated Timeline for Visual Validation

1. Preparation of solicitation documents
   • (1-3 Months)
2. Vendor selection and award process
   • (2-3 Months)
3. Design and development of software by vendor
   • (3-6 Months)
4. Pilot program phase 1: internal beta test
   • (3-6 Months)
5. Pilot program phase 2: public facing beta test
   • (3-6 Months)
Roles and Responsibilities

Transit agency staff would be responsible for these roles (provided that the agency has sufficient internal expertise for the given roles):

- Managing the pilot program
- Training drivers to understand how to identify active mobile tickets and answer customer questions
- Updating internal accounting and reporting procedures to include mobile ticketing transactions
- Marketing to educate riders and the public about the availability of mobile ticketing
- Information technology integration (if required)
Pilot - StarMetro

• What are the desired system capabilities?
  • Pay for fare with mobile device via QR code or NFC technology; Allow purchase of multiple fares from mobile device; Receive transfer ticket to mobile device; plan trips via mobile device; show real time bus location on mobile device

• When is the timeline for planning and deployment activities?
  • Fall 2016
Pilot - StarMetro

- **How – What are the desired user interface features?**
  - Integration with mobile payment systems, such as Apple Pay, Google Wallet, and PayPal; notification services; Minimal driver intervention
- **Who – Who are internal and external stakeholders?**
  - Internal stakeholders: drivers, planners, internal financial analysts, IT support staff, and shop mechanics
  - External stakeholders: riders, city officials, and new customers
- **Why – What is the justification for the system?**
  - Increase ridership via new payment options; improved efficiency in fare collection
Proposed Evaluation Plan - internal beta test

1. Number of mobile tickets successfully purchased by agency staff testers
2. Number of failed attempts to be documented by agency staff testers
3. Reason(s) for any failed attempt to be documented by agency staff testers
Proposed Evaluation Plan - internal beta test

4. Amount of time it takes to validate a ticket via the mobile app when boarding a transit vehicle.

5. Amount of time it takes to validate a normal fare when boarding a transit vehicle.

6. At the conclusion of Phase 1 of the beta test, bus operators on the selected routes will be surveyed to gain an understanding of their field experience with the mobile app.
Focus Group / User Testing

Riders could be asked to describe the drawbacks (i.e. pain points) of the current ticketing system on StarMetro. Then, riders can be asked to provide feedback about mobile ticketing, and answer questions to help structure the discussion:

• What did you like and/or dislike about the app?
• How would this app impact your daily commute?
• What would convince you and your family/friends to use mobile ticketing?
• Is mobile ticketing more convenient than the current method you use to pay your fare?
Survey of Beta Testers

1. Total number of mobile tickets successfully purchased by beta testers during the testing period
2. Level of utilization of the mobile app (e.g. daily, weekly, etc.)
3. Issues experienced while purchasing a ticket (if any)
4. Areas of the mobile app that they identify for improvement and additional development
5. Level of satisfaction with the mobile ticketing app
Survey of Beta Testers

6. Level of desire for containing to use the mobile ticketing app following the beta test

7. Other features (e.g., real-time arrival information, trip planning) used

8. Typical method and frequency of fare payment prior to using the mobile app (to help capture if any riders reduced cash payments as part of the beta)
A Point to Ponder . . .

Agencies see visual validation / QR Code scanning as a low barrier to entry for mobile ticketing where the integration needs are not as intense, and therefore cheaper/quicker to implement. Examples:

• The Comet and NICE, 6 months from concept to deployment
A pilot requires almost as much work as a full deployment – you still need staff and public training time, marketing, etc. So, don’t underestimate the effort for a “pilot” if you want it to be successful.
Extra . . . Survey Says

Information needed for deciding on mobile fare payment option

- 70% need to know costs
- 60% need to see cases studies documented
- 60% need specifications
- 30% need to see RFP examples
Questions?

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