Using Journey Mapping to Shift Mobility Patterns

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Problem Formulation

In transportation, the word “journey” means a trip from point A to point B. Meanwhile, design research uses “journey” metaphorically to represent the chain of events leading to an user interaction with the product. Traditional journey maps have visually revealed paint points and latent needs in product use, yet they are customer-centric, qualitative, and antiquated; from a research perspective, there is also no formal procedure for creating journey maps. For a long term project with the Toyota Mobility Foundation, we are trying to devise a new journey mapping research tool to help answer the question of “How do we improve the use of public transportation?” We approach this issue from a multi-stakeholder surveying process to inform tool research development, data analysis, and ultimately policy recommendations.

Preliminary Investigation

From reviewing existing literature, we understood that factors affecting travel decision making include 1) traveling patterns (action, price, time, wealth, car ownership); 2) mood; 3) external factors such as policy. After brainstorming approaches to research design and implementation, we acted on the following:

1. Investigating current tools: a storyboard study was conducted on three currently-existing apps for journaling (Qeepsake, Grateful, and Experience Fellow, figures 1-2) to gain an understanding of valuable functionalities and UI elements to incorporate into our journey mapping tool. This process identified the need for our journey mapping tool to 1) prompt user for relevant information at specific touchpoints; 2) support multimedia user data entry; 3) fit seamlessly into the user journey without inconvenience for user participation.

2. Outreach to Caltrain and BART: BART (Bay Area Rapid Transit) and Caltrain are two major regional public transport providers in close proximity to Stanford University, and were both contacted for interviews in the hopes of understanding specific pain points throughout user journeys through the transport operator standpoint, particularly through the direct day-to-day interactions between the service provider staff and public transport users at various touch points. Unfortunately, both transport operators were unable to accomodate the interviews at this time.

3. Internal Qualtrics Survey: A preliminary survey was designed and distributed within the IRIS Design Lab network to identify key pain points in public transport journeys for further analysis in the potential journey mapping tool. The survey, built on Qualtrics, included 10 questions to profile the respondent’s travel patterns and experience with public transport (BART/ Caltrain). Its 13 responses outlined relevant pain points throughout 3 stages of public transport usage: pre-boarding, on-board, and post-boarding.

App Design Process

With knowledge of the relevant pain points for analysis in public transport journeys and the current surveying/journaling tools available, we proceeded to creating a journey mapping tool. Table 1 outlines the key points we identified for the design and implementation of the journey mapping tool after reviewing a series of apps with location-specific user review features.

<table>
<thead>
<tr>
<th>Key Elements</th>
<th>User Input Data</th>
<th>Logistics</th>
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<tbody>
<tr>
<td>• Journey progress (map + progress bar)</td>
<td>• Mood selection</td>
<td>• Incentivization: cash prize, prepaid transit card</td>
</tr>
<tr>
<td>• Touch points and/or pain points</td>
<td>• Audio input</td>
<td>• Marketing: QR code, google form sign up through posters</td>
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<tr>
<td>• Prompts/questions</td>
<td>• Written comments</td>
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<td>• Photo imagery</td>
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Table 1: Journey mapping app design + implementation considerations

One particular journaling app, Day One, included most of the desired journey mapping functionality features outlined above, besides the location-specific mapping feature to indicate journey progress. We contacted the Day One developer team for a potential collaboration to develop an extended version of the app including the location-tracking journey progress map display tailored for this project, however they are unable to collaborate at this time.

Thus, we began designing our own app through sketching screen outlines, diagramming basic user flow, and a low-fidelity image prototype (figure 3 below).

Future Steps

1. Complete journey mapping app development from wireframe
2. Large scale journey mapping app marketing to collect representative data from BART/ Caltrain users for further data analysis
3. Data analysis: using machine learning to build a quantitative stochastic Markov model (including location and mood) for passenger decision making with data collected from public transport users

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Results and Discussion

The low-fidelity journey mapping app prototype, after proven effective in demonstrating basic functionality and user experience, was further refined into a high-fidelity mockup through Marvel, the online prototyping platform. Figure 4 above shows the app full wireflow and screen demos. Users begin their journey after the welcome screen, indicate journey start + destination, and can input data (photo/ text/ audio/ mood) entries throughout the journey at specific touch points. Each entry is time stamped and can be edited before the journey’s end.

References