IMPROVING THE USER EXPERIENCE OF THE LAWRENCE TRANSIT SYSTEM:

A FOCUS ON MAP USABILITY AND ROUTE PLANNING

BY

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in partial fulfillment of the requirements for the degree of
Master of Arts.

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The Thesis Committee for Eric Berkman certifies
that this is the approved Version of the following Thesis

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Between the Kansas and Wakarusa Rivers, above the prairie low lands, settlers and emigrants navigated along these ridge tops heading westward along the Oregon Trail to claim free land. The terrain not only provided travelers a direct route, but also a safer one that avoided the steep slopes and river crossings.

Today, the City of Lawrence has grown from a small trading post from the 1850's to home of over 90,000 people. As the city continues to develop and expand, its route layout has grown in complexity. Now, an increased need and concern to expand public transportation has become a focus of its diverse population.

In 2000, the Lawrence Transit System, or T, was established to provide an alternative mode of transportation for its citizens. In its first year, the service provided 155,737 one-way trips. By 2004, the T had had over one million riders since its inception. In 2008, the tax payers agreed to continue the service with added resources. Despite the growing success in the increase in ridership of the T each year, many user concerns over poor route coverage and convenience and route planning difficulty have failed to be addressed by the City stakeholders.

The focus of this thesis is to address these user concerns and improve the user experience by improving the route system and map usability. I explored these goals through a user-centered and participatory approach where ideas are generated, analyzed, and synthesized using various frameworks and methods of representation.

The proposed route system is improved by expanding city coverage without adding additional routes. Data from the City of Lawrence Transit System reports as well as stakeholder interviews provided information that developed a sample of the most requested and used stops. These priority stops were used to develop efficient and direct routes with

reduced transfers and travel times. The proposed routes were tested against the original system and have shown a 34% improvement in the amount of required transfers.

The route map is improved by addressing usability standards. According to users and non-users, the original route map is difficult to read, understand and route plan. The new map design has improved legibility, readability, and is accessible for the color-vision impaired. Its route planning attributes now include a correct orientation to reflect the current position in the environment. Studies on orientation and route planning in this thesis have found that: users are able to quickly identify their location with less frustration when the map's orientation is the same as its facing position in the environment; the map should represent the user's mental model of the city; notable paths, nodes, districts, edges, and landmarks found in the environment are referenced on the map; a "You are Here" marker reinforces the user's understanding of their position in the environment.

The details of the thesis are organized and presented in the attached supplemental file. The thesis is organized by its two project goals: Early Design Research: Understanding the Current System; and Design Process: To Improve the User Experience of the System.

The first goal, Early Design Research: Understanding the Current System, details: the users, how I become familiar with the system, and user needs and design requirements. The second goal, Design Process: To Improve the User Experience of the System, details: improving the route system through coverage and convenience, and improving the usability of the map though wayfinding, route planning, and accessibility.

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