November 26th 2007

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Lawrence Transit System
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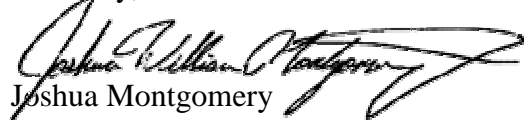www.lawrencetransit.org

Dear Cliff,

After talking with Mike Dever and the technical staff here, we decided to put in a more formal
proposal for the BusQuest system that we discussed.

Attached you will find a more detailed outline of the proposed solution, a specific cost proposal
indicating how we would be compensated and four suggested actions for a follow up meeting.
At this meeting we would like to discuss:

1. Whether the City Commission is on board with the development of a digital advertising
   platform.
2. Potential benefits of the information services provided to the bus company.
3. Targets for increasing the number of riders using the system.
4. Specific steps that can be developed into a roadmap for implementation.

I look forward to meeting with you and Commissioner Dever.

Sincerely,

Joshua Montgomery
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LawrenceFreenet
A Community Connection

BusQuest

Increasing choice ridership of the Lawrence Transit System using Information Technology.

http://www.busquest.org

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Executive Summary

In January of 2007, Lawrence Freenet proposed that the Lawrence Transit system make use of the Freenet network to increase the number of choice riders using the public transit system. Over the next several months the company also brought this proposal up with each of the city commission candidates.

During the intervening period, the company has vastly increased its coverage in the City of Lawrence. Figure 1 below shows the difference in coverage between January and November of this year.
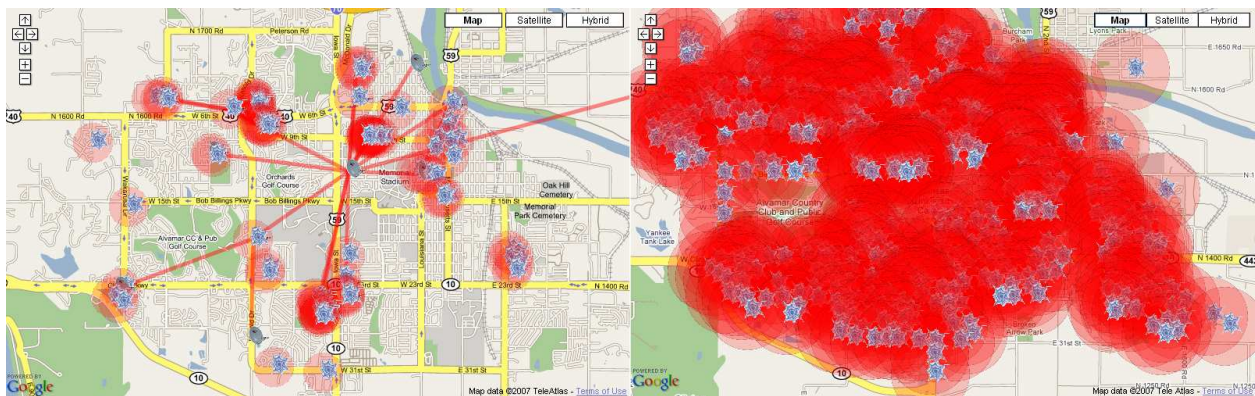

Figure 1: Freenet WiFi Coverage Expansion – January –November 2007

As part of a strategic initiative to expand services on its broadband network, Freenet would like to renew its offer to develop a suite of Internet based public transit applications for the Lawrence Transit system. These applications can be provided in a revenue neutral manner and are likely to expand choice ridership, increasing the number of paid riders and further developing the market for public transit in Lawrence, KS.

System Overview

The system proposed by Lawrence Freenet is a network based system which will be developed specifically to provide services to public transit entities. The goal of the development process is to create a system that is:

- Useful to riders
- Revenue neutral
- Capable of expanding transit ridership

The reason that Freenet is pursuing these technologies is to develop a robust system that will be useful both in Lawrence and in other communities. It is Freenet's goal to create a system that can be deployed in municipalities all over the country to expand ridership, generate revenue and improve public transit.

To do this, the company plans to develop three major components:

- BusQuest Tracker – Real time tracking of bus locations
- BusQuest Route Planner – A web based application for riders to plan travel
- BusQuest Network – A 802.11g based platform for delivering high speed wireless broadband to bus passengers

BusQuest Tracker

The BusQuest tracker is a technology that will enable riders to track and follow buses in real time. Buses may be tracked online via the Internet or via vandal resistant kiosks located in bus shelters.

The busquest tracker will show riders when the next bus is coming and will help to make the waiting process more enjoyable by eliminating stress. This is much the same approach that Disney World uses to reduce the stress of waiting in line for rides. Riders who know when the next bus is arriving will be more relaxed and will have a more pleasant experience with public transit than those who might worry that they have missed or might miss the next bus.

The BusQuest tracker will make use of GPS information, scheduled routes and scheduled maintenance windows to show when the next bus will arrive at any given bus stop.

The tracker will show users a specific bus, a specific route or all of the buses in operation.
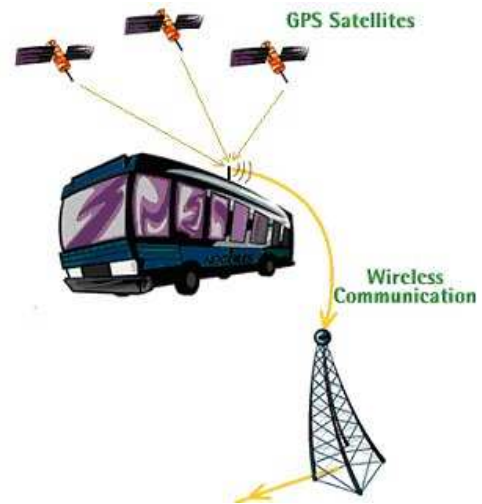

Figure 2: BusQuest Tracker

One additional benefit of the tracker will be to provide Lawrence Transit System supervisors with the ability to track all of the active busses in real time. This can help them to better supervise the system improve response time to mechanical and scheduling problems.

BusQuest Route Planner

The BusQuest route planner is a tool that will allow riders of the T to plan the optimum route for getting from one point to another. This planning application will be available:

1. On a personal computer via the Internet
2. At bus stops via an Internet connected Kiosk
3. On mobile phones via the Internet

Users of the system will be able to input a starting address, ending address and the time they would like to arrive or leave. The application will then show them

which buses they should take, and when they should transfer. The total trip time will also be displayed.

By better communicating with riders, capturing information on where potential riders are originating and on preferred destinations for T users, the City of Lawrence will be able to expand ridership to new choice riders while better serving current T riders.

BusQuest Network

Figure 3: WiFi Enabled Phone

The BusQuest network will be a network of high bandwidth WiFi Internet hotspots designed to serve T riders with high speed data services. This network will be integrated with the existing Lawrence Freenet network to provide anyone waiting for the T with the option of accessing the Internet via a laptop or, more likely, WiFi enabled mobile phone.

Riders will also be able to access hi-speed internet from the busses themselves by using a mobile hotspot built into the vehicle. This hotspot will allow riders to use their time on the bus to send e-mail, surf the internet and work on important work and school related documents.

The technologies used to deliver this service have been widely proven in the Lawrence community with thousands of Lawrence residents using the WiFi network each day as their primary form of Internet access.

BusQuest Timers

This system would be interconnected to the real time tracking system and would reside in the shelters and *possibly* on bus stop poles. The display would show the arrival time of the next bus based on real time tracking data obtained from the tracking system.

Figure 4: Example of Next Bus Display

These timers would make it more convenient for users of the bus system by showing them exactly when the next bus is due at the shelter.

Cost Proposal

Implementing the BusQuest system in Lawrence is likely to be an expensive endeavor. Included in the effort will be a significant amount of equipment, software development, system integration and testing.

Since no municipality has implemented a system of this type, the total costs are difficult to estimate, but it is expected that the overall effort will not cost less than $500,000 and may cost as much as twice this amount.

Lawrence Freenet is proposing to be compensated for the design and implementation of the BusQuest system by having exclusive rights to install digital or print advertising in the following locations:

1. Bus exteriors.
2. Bus shelters.
3. Buses Interiors.
4. BusQuest related software or web applications.

Once the costs of building and operating the BusQuest system have been realized, Freenet would propose to split the net revenue from the system 50/50 with the City of Lawrence. This means that creating a financially viable system would benefit the both the City of Lawrence and the Lawrence Freenet project.

Bus Exterior Advertising Installation

The exterior advertising installation is designed to present advertising in an attractive manner without diluting the brand of the bus system.

The company proposes putting exterior ads on the city's buses using LCD display technologies. Advertising presentation will vary depending on time of day and the location of the bus. For example, in the hours between 2:30 PM and 5:30 PM when school age children are out and about, advertising might focus on toys, games and other age appropriate materials. During the lunch and dinner hours, however, advertising might focus on restaurants and eateries.

The company suggests placing 3 LCD displays on the buses, one on the back of the bus, and one on each side. These displays would be connected to a computer system somewhere on the bus frame. Advertisements would be fed to the LCD displays based on the location of the bus, the current rate of travel and the current time of day.

Displays could be shut down while traversing residential neighborhoods or other spaces where the display is determined to be out of character for the neighborhood.

Bus Shelter Advertising Installation

Bus shelter advertising would be placed on the window of the shelter facing oncoming traffic. The image displayed would be determined by the location of the shelter and the time of day. Displays would be vandal resistant and would be connected to a small computer located somewhere within the shelter structure.

Displayed advertising would be visible to passing vehicles, but would be turned off late at night to save power and prevent light pollution. It is likely that the display and the on site kiosk would be powered by a solar panel located on or near the shelter enclosure.

Figure 5: Bus shelter with ad for local business.

Panels would be installed and maintained by contract staff and would be designed to resist

Bus Interior Advertising Installation

Figure 6: LCD On Board London Bus

Interior advertising would be graphic only. The presentation would take the form of 19" LCD displays mounted on the ceilings or side walls of the buses. In addition to advertising, these displays would be used to present the next stop and the projected arrival time.

Panels could be mounted in the front of the bus as shown in

Figure 6 or it could be mounted above the windows as is done with traditional advertising in buses and light rail around the country.

BusQuest Software & Web Application Advertising

The last form of advertising proposed would take place on the transit planning page and within the route planning application. Advertisements would be non-intrusive and related to the end user's start and destination address.

Entering a destination of 900 Mass. St. might result in an advertisement for the Mad Greek being displayed beside the search results. Examples of content based advertising can be found in many places on the Internet and are a common method of helping to pay for web content and applications.

Advertising Limitations

In keeping with the mission of Lawrence Freenet to serve the community, no advertising will be permitted on this platform that will adversely impact public health. This includes:

1. Advertising for tobacco products.

2. Advertising of a sexually explicit nature.
3. Advertising for alcohol products or establishments whose primary product is alcohol.

In addition any advertising that is deemed by management to adversely influence the public image of the City of Lawrence or Lawrence Freenet will be summarily denied.

The company also reserves the right to deny any advertiser for any reason or no reason.

As a matter of policy and to prevent potential litigation or accusations, denied advertisers will not be informed as to the reason for the denial.

Suggested Actions

If the City of Lawrence is interested in moving the project forward, the next step is to meet and discuss the viability of the project. During this meeting we can discuss:

1. Whether the City Commission is on board with the development of a digital advertising platform.
2. Potential benefits of the information services provided to the bus company.
3. Targets for increasing the number of riders using the system.
4. Specific steps that can be developed into a roadmap for implementation.

As a sign of good faith, Lawrence Freenet staff will begin to implement a Google Transit solution for the T system. The organization will take responsibility for keeping the routes and schedules up to date and accurate.