GreenCityStreets.com – Using ITS to improve transport planning

Andrew Nash[1*]

1. Vienna Transport Strategies, Austria, Bandgasse 21/15, A-1070, Vienna, Austria, +43 676 933-0483, andy@andynash.com

Abstract

GreenCityStreets.com is an Internet application designed to test the use of ITS techniques in improving transport planning. It consists of a game, best practices library and social network. The game and best practices are designed to educate residents, while the social network allows them to suggest ideas for improving transport. The application was developed and tested in Vienna during 2011. The application was successful technically, but failed to attract a critical mass of users. The paper presents lessons learned for future projects. The application is on line at www.greencitystreets.com.

Keywords:

public transport planning, online games, social networking, gamification

Introduction

The GreenCityStreets project tested the idea of applying intelligent transport systems (ITS) in the transport planning process. The project developed an internet application that educates people about public transport and provides a social network for people to suggest and comment on ideas for improving local public transport service.

The application was developed because urban transport planning is complex. Therefore teaching people about public transport should help them provide more valuable input into the planning process. This education + comment approach has been used successfully in paper-based project planning. The goal of GreenCityStreets was to test the approach using new information technologies. The project consisted of creating an educational game, a best practices library and a social network. The three elements were combined into an integrated application called GreenCityStreets.

This paper describes the concept behind the application, the application's development and implementation, project results and lessons learned.

Concept/Literature

Many ITS applications are designed to make existing transport systems operate more efficiently. GreenCityStreets uses ITS technologies to help improve the transport planning process.

The use of information technology (IT) at all levels of government is increasing rapidly. One promising area is using IT to help "rethink the role of citizens." [1] [2] Importantly, the main goal of using IT to improve citizen participation isn't about data, culture, accountability or efficiency, though they all matter, it's about building a community to work together to solve problems. [3]

The idea of building a community to solve problems has been used in transport planning for many years. An effective public involvement program brings people together to help plan transport projects. These programs (a) provide creative new ideas; (b) help increase public support for implementation; and (c) confirm trust in the responsible government agencies. [4]

However, there are several problems faced in creating effective public involvement programs.

First, many transport projects and planning processes are complex. This means that education is necessary. GreenCityStreets was designed to use modern IT applications to educate residents about how to improve public transport. The approach is proactive: create a fun way to learn about public transport (an online game) and link the game to a best practices library so people can learn more.

Another problem is apathy. Public processes tend to attract only those people most impacted by the project. But most projects impact many others indirectly and/or in ways they do not fully understand (a problem linked to complexity). Limited participation means that public decision-making is often over influenced by special interest groups.

This sounds like an ideal situation for internet-based social networking. Social networking enables people to learn and participate on their own schedules without geographical proximity (i.e. attending meetings). GreenCityStreets provides a forum to help facilitate participation in the decision-making process. Since the forum includes the standard social networking features it's easy to participate and make your voice heard.

Developing GreenCityStreets

GreenCityStreets consists of an online game, best practices library, social network and a website. The project began as an idea for a wiki-based library of best practices for technicians. Next came the idea of developing an educational game to encourage non-technical people to learn about the subject. This was followed by a social network designed to encourage people to do something with what they learned. A prototype application was developed as part of the City of Vienna's Die Stadt 2020 Call for Projects.

Best Practices Library

The best practices library consists of a set of web pages providing general information about how to make public transport more attractive and cost effective, with links to a set of wiki pages presenting more detailed information and references. The web pages are targeted towards non-professionals and were created using WordPress. Figure 1 illustrates the first page. http://wiki.greencitystreets.com/improve-public-transport/

Figure 1 – GreenCityStreets Best Practices Web Page

The wiki pages are targeted towards professionals. The idea was that professionals would add information to the wiki based on their current research or projects. This would serve as a reference for both non-professionals and other professionals.

A wiki is a website that provides special tools enabling anyone to edit the website pages and to create new pages. The most familiar wiki application is Wikipedia, the open source on-line encyclopedia. The GreenCityStreets wiki was developed using Wikispaces, a free application. Figure 2 shows the wiki. http://busmeister.wikispaces.com/

Figure 2 – GreenCityStreets Best Practices wiki

BusMeister Game

The BusMeister game is designed to attract people to the website and to teach them how to improve public transport in a fun way. A key objective was to help non-professionals understand the benefits of small changes to public transport service (e.g. the benefit of traffic signal priority). Once people understand these benefits, they will be more supportive of appropriate improvement projects.

BusMeister was created by Platogo GmbH, a Vienna-based internet game developer. There are many online games that model city and transport planning including Transport Tycoon and SimCity. [5] [6] [7] The key problem in developing a planning game is how to make the game fun. In other words a "game" rather than a simulation. In addition the game needs to be realistic so that it can be educational.

The BusMeister game is designed to illustrate how public transport works. Players add measures (e.g. bus lanes) to the "street" to improve bus operations. They receive points for

improving user satisfaction and for reducing costs. User satisfaction includes both bus riders and automobile drivers to teach players the need for considering all users. Figure 3 illustrates the game. The game can be played on the GreenCityStreets website.

Figure 3 – BusMeister Game Screen Shot

Social Network: GreenCityStreets Forum

The GreenCityStreets Forum is a social networking platform designed to encourage people to suggest ideas and express support for improving local public transport. As a social network it enables users to suggest improvements and then allows other users to comment, "Like", add more information, etc. There are three important objectives for the social network:

- **Crowdsourcing** – residents often understand local issues better than planners, the forum encourages them to suggest and comment on ideas in their neighborhoods;
- **Political Support** – many good ideas die for lack of support, the GCS Forum allows people to express their support for ideas, thus providing political support for good ideas even when they cannot attend meetings in city hall;
- **Committed Customers** – transport agencies need advocates in the real and virtual worlds. The GCS Forum provides a setting where users can discuss local transport

problems (informed by ideas from the game and wiki) without the need for intervention by public transport operators. Furthermore, the Forum provides these advocates an opportunity to organize real activities to help improve local transport (e.g. clean-up days).

Figure 4 illustrates the GreenCityStreets Forum. The Forum was built on the Facebook platform and presents ideas from users for improving public transport. The ideas are presented on a map and can be sorted in numerous ways (e.g. by city, route, etc.). People wishing to actively participate (i.e. add ideas, comment on or "Like" existing ideas) must log-in via Facebook (although anyone can read ideas and comments).

The GCS Forum is similar to sites like seeclickfix, fixmystreet or fixmytransport. These applications allow people to report non emergency issues to local governments and provide government agencies with tools to help manage this information. [6] The main difference is that GreenCityStreets also provides educational information and encourages people to provide planning ideas.

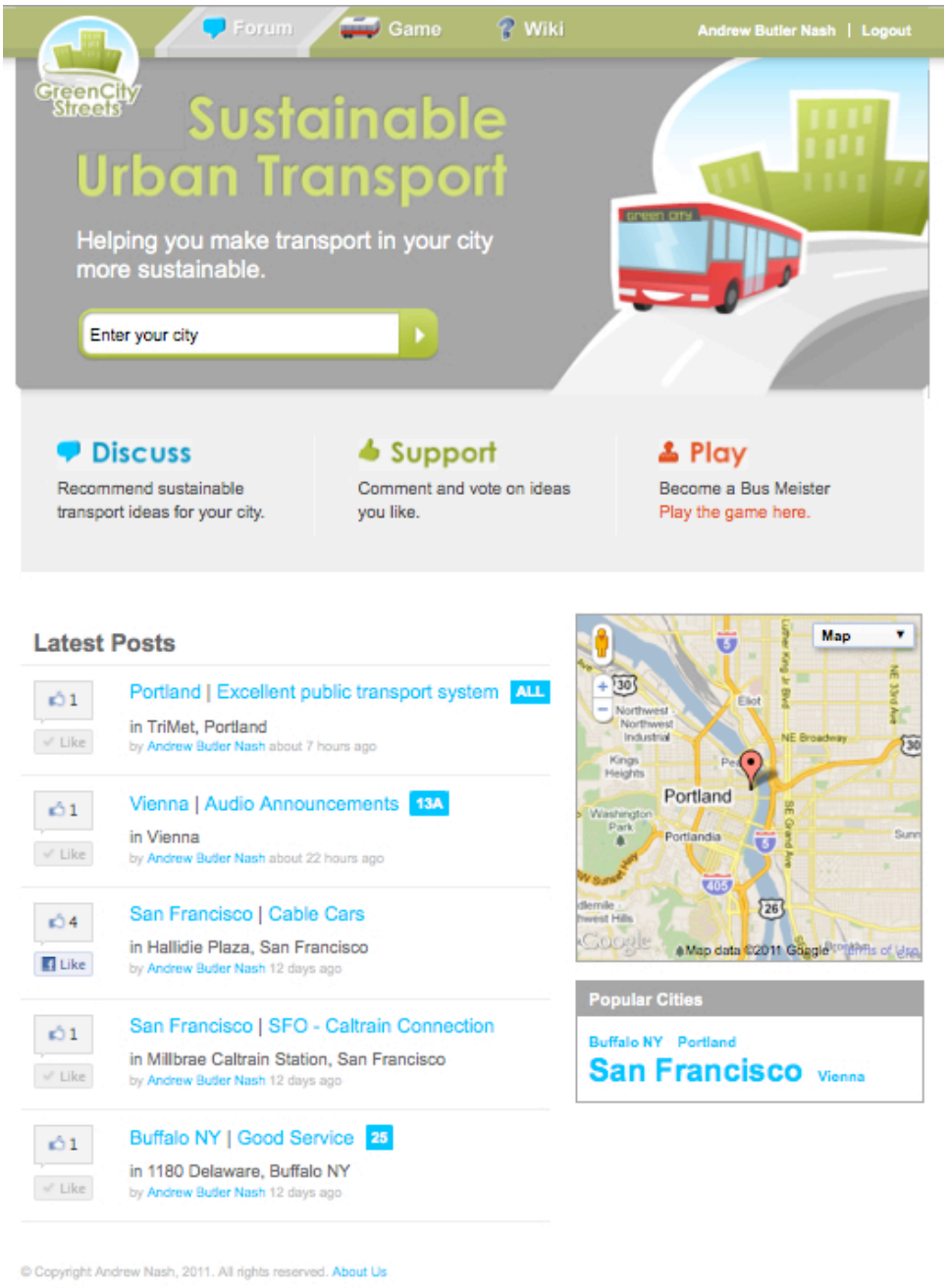

Figure 4 – GreenCityStreets Forum Social Network

Project Evaluation and Lessons-Learned

The GreenCityStreets project was designed to test the idea of using information technology applications to improve citizen participation in transport planning. This goal was partly accomplished: the application was created and it worked, however it did not attract enough users and therefore was unsuccessful. This section summarizes lessons learned.

Having a client is necessary

It was originally thought that the game alone would attract enough people to make the social network an active forum for the exchange of local public transport planning ideas. In fact the game did not attract enough people to achieve this goal.
The solution is to develop the application for a specific client. A client would have provided: (a) more publicity; (b) more resources and focus for the project; and, (c) a supportive eco-system (i.e. someone who will actively respond to forum suggestions). A variety of organizations could be good clients for the application including public transport agencies and local advocacy groups.

Really listening to customers is not easy

While there is much interest in using social networking in the public and private sectors today, few organizations have taken the step of proactively using social networking to help design changes to their products and services. [8] Many believe that responding to customers would take too much time or resources. Others fail to see the benefits of building strong relationships with their customers.
On the other hand, some companies have been very successful using customer provided information to improve their products and services, and to build strong relationships. An important success factor for these companies is developing applications and back-end processes designed to help them respond to comments efficiently and harvest good ideas from the comments effectively.
Finally, it's important to remember that new technologies are making it easier for others to create social networking applications around a specific subject. Far better for public agencies to be proactive in creating their own applications so they can gather the data they need to improve operations.

It's difficult to attract contributors

The GreenCityStreets best practices library was intended to encourage professionals to provide information on their research and projects in an easy to understand and organized wiki database. It proved very difficult to get people to add information to the wiki. The main problem is that very few people are interested in providing information for a website that won't be seen. The solution is to link the best practices library to a larger organization or website (e.g. create Wikipedia pages).

Games must be easy to understand and play

Many people felt that the BusMeister game was too difficult to play at the beginning. This meant that the user interface was not sufficiently clear, attractive and easy to use, and that the game progression did not provide sufficient encouragement to keep playing.
The solution is to improve the BusMeister user interface based on detailed evaluation and player feedback. A further complication for the BusMeister game was technology. The game was created using Adobe Flash and therefore could not be played on Apple iPads. This reduced interest in the game for a potentially ideal audience (i.e. bus riders on buses).

There are limitations to using Facebook

The GreenCityStreets Forum application requires users to register on Facebook to fully participate. The Facebook interface made it possible to develop a full-functioned forum application, but meant that active participation is limited to Facebook members.
Using Facebook was appropriate for the prototype, in a real application (e.g. for a public transport agency), the forum should be hosted on a private server to allow non-Facebook users to participate, but also so that the organization could use the information generated more easily.

Acknowledgements

The author gratefully acknowledges the financial support received from the City of Vienna's Technology Support Agency ZIT for developing GreenCityStreets. The author also wishes to thank the project team from Platogo GmbH, Snizek + Partner Transport Planning GmbH, and contributors to the best practice wiki, especially Paudie Fitzgibbons.

References

1. Kamensky, John M. (2010). Rethinking the role of Citizens in a Gov 2.0 World, *The Business of Government, Spring 2010*; IBM Corporation; available at: http://www.businessofgovernment.org/article/rethinking-role-citizens-gov-20-world accessed July 25, 2011.
2. Brown, Lloyd D. (2010). Web 2.0 Tools for Customer Communications, Strategies and Practice at the Washington State Department of Transportation, Transportation Research Board, *TR News 271*, pp 18-25.
3. Howard, Alex (2011). A refresh for open government in British Columbia, O'Reilly Radar, July 26, 2011, available at:

http://radar.oreilly.com/2011/07/british-columbia-open-government-data.html accessed July 27, 2011.

4. Nash, Andrew (1997). Public Decision Making for the Caltrain Downtown San Francisco Extension Project; *Transportation Research Record #1571*.
5. Nash, Andrew (2011). Web 2.0 Applications for Improving Public Participation in Transport Planning, available at: http://www.andynash.com/nash-publications/2009-Nash-Web2forPT-14nov09.pdf accessed July 25, 2011.
6. Nash, Andrew (2010). An Integrated Web 2.0 Approach for Improving Public Transport, available at: http://www.andynash.com/nash-publications/2010-Nash-PTweb2appsTRB11-14july2010.pdf accessed July 25, 2011.
7. Poplin, Alenka (2011). Games and Serious Games in Urban Planning: Study Cases, available at: https://www.hcu-hamburg.de/fileadmin/documents/Professoren_und_Mitarbeiter/Alenka_Poplin/Poplin_article_CTP_2011_final.pdf accessed July 31, 2011.
8. Judd, Nick (2011). In Search of Ideas: How Counties and Towns are Trying to Tap Citizens' Smarts, *Personal Democracy Forum, TechPresident,* available at: http://techpresident.com/blog-entry/search-ideas-how-counties-and-towns-are-trying-tap-citizens-smarts# accessed July 25, 2011.