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Wellington Cycling and Walking Journey Planner

Abstract for Presentation at 2009 Cycle Conference

Following on from the functionality of Greater Wellington's Metlink journey planner web site (for public transport) there was a desire to develop an online journey planner for walking and cycling to facilitate and encourage cycling or walking commutes and short journeys. Several journey planners for walking or cycling had been developed in Europe, but none in New Zealand.

In September 2008 Greater Wellington (GW) issued a request for proposals, inviting IT developers to submit proposals for the development of a cycling walking journey planner (CWJP). The request explained that the solution should provide the user with detailed information about their requested journey, including a mapped route, text navigation prompts, anticipated trip time, an elevation chart and points of interest along the route.

The project was awarded to Wellington's ProjectX web developers in November 2008 and work started soon after. By May 2009 it was clear that choosing the 'best' route between two points is a fiendishly complicated problem, with many possible 'right' answers. Selecting the most desirable route in areas with complicated topography is particularly difficult.

In order for this application to be more useful than the existing walking/driving route planner on googlemaps.co.nz it is critical that excellent data be used. In particular, data that details mode-friendly infrastructure such as off-road paths, cycle lanes, street lights, etc. This data needs to be collated into separate GIS layers (so that it can be updated in discrete data sets). The route data must then be merged before the CWJP determines an optimal route. As the holders of data on local infrastructure, the Territorial Authorities and NZTA are essential partners in the CWJP project.

Prior to completion, the CWJP underwent extensive testing by experienced walking and cycling commuters. This led to the resolution of numerous flaws in the data layers. Ongoing data management and site upgrades are expected to be a key element of the success of the CWJP.

The journey planner was launched on World Car-free Day, 22nd September 2009.

We believe the CWJP is a valuable tool for those considering mode change to walking or cycling, and those new to the Wellington region.

PowerPoint Presentation Notes

✚ What's wrong with maps?

Maps are great! However, there are limits to how much data can be displayed and the land area that can be displayed at a meaningful scale. Many people find them difficult to interpret. They can be expensive to update and re-print. They are more difficult to get your hands on than a website.

✚ What are the alternatives?

- A guide or buddy to show you the way
- An alternative travel mode, like a bus
- An online tool...

Online Journey Planners – Pros and Cons:

Greater Wellington's public transport journey planner:

<http://www.metlink.org.nz>

Serves public transport users well, but map and track data is too poor select best walking options. No route directions for walking leg.

Google maps:

<http://maps.google.co.nz/>

Very easy to use, but track data too coarse to select best walking option. No cycling option. Altitude ignored.

Map my Ride website:

<http://www.mapmyride.com/>

Need to be a registered user. No local tracks data. No ability to drag route to alternate paths.

Transport for London Journey Planner:

<http://www.mapmyride.com/>

Trying hard to do it all – complicated for cycle-only use. Map doesn't include all street names or park names. No directions given. Difficult to customise the suggested route.

Walkit Journey Planner:

<http://www.walkit.com>

Nice and focussed – easy to use. Includes directions, and a blog. Map doesn't include all street names, etc. Difficult to customised the suggested route.

Project Outline

- ✦ Mid-2008 GW decided to create an online journey planner for walking and cycling
- ✦ \$70,000 budgeted, plus support from local councils (with provision of data)
- ✦ Request for proposals process completed (included design outlines)
- ✦ Contract signed with local IT developer, ProjectX, in December 2008
- ✦ Target market analysed and model user's needs outlined prior to initial design
- ✦ Basic website and data management tool developed by the time I started in May
- ✦ Some obvious problems with hilly route selection and choosing locations without addresses fixed fairly fast.
- ✦ Data management became a huge issue – data segments are often tiny (i.e: as short as a single metre of road) so finding a problem can be difficult. This is much more difficult in off-road areas where segments have no name. Merging multiple datasets is problematic (e.g: track data finishes at the footpath and does not connect with Terralink's road centreline data).

✦ User testing

- *Artificial Intelligence is no match for Natural Stupidity*
- Testing workshops held with walking and cycling groups
- Several issues with functionality and hundreds of data errors identified
- The region's leading orienteering cartographer brought on board to help with testing and correcting data

✦ Made as many improvements as possible and assigned other issues to 'Phase 2'

✦ Launched on World Car-free Day – 22nd September.

✦ Over 2,500 hits on first day. Also a couple of dozen feedback responses (generally due to data flaws) and many positive comments.

Summary

✦ At every stage of the project it has become apparent that providing a useful journey planner is far more complex than expected. The route choice available to walkers and cyclists is many times more complicated than driving or public transport options due to the myriad of off-road path options and types available.

⊖ Wellington city is probably the most complicated for walkers and cyclists to navigate through – ProjectX jumped in the deep end

⊖ Walkers, in particular, make an incredible number of subtle decisions when deciding how to get from A to B.

⊖ Cyclists choose different routes from A to B based on terrain, wind direction, time of day, tolerance to traffic, desire for exercise, bicycle type, mood, etc.

⊖ The 'best route' is in the eye of the beholder – the site makes a suggestion and provides information to allow customisation.

⊖ The Cycling and Walking Journey Planner raises the profile of active transport.

Demonstration of Cycling & Walking Journey Planner

<http://www.journeyplanner.org.nz/>

- ⊕ Check out the sample walking or cycling journeys or design your own.
- ⊕ After entering a start and finish location the journey planner will calculate the most direct route from A to B. However, it will place a bias against large hills and select a flatter route if it is only slightly longer.
- ⊕ It will provide detailed directions for following that route (which is highlighted on the Google map) and can provide alerts about hazards along the way. An altitude graph and weather forecast are provided.
- ⊕ Right-mouse-click to select a location anywhere on the map.
- ⊕ Click and drag your route or add multiple destinations to customise your route.
- ⊕ Check the weather for the area selected; change the points of interest displayed; or switch to a different map/satellite view.
- ⊕ There are F.A.Q.s answered in the 'Intro' section.
- ⊕ We are including 20 different types of points of interest, such as cycle racks, libraries, toilets, street lights and bus stops. The location of approximately 60,000 points of interest have been loaded into the journey planner so far.
- ⊕ Alerts are given to warn users that they are on a major highway (with a suggestion that they click and drag their route to a parallel path).
- ⊕ There are dozens of features that we are considering adding to phase two of the journey planner. These include showing where paths include flights of steps, where roads do not have footpaths, and using better altitude data to show where streets are very steep. We also hope to incorporate the altitude data into the journey time estimate.

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