

# **WHITE PAPER PRESENTATION**

## **The Way We Walk Navigating in the dark 24/7 By Logan McMullen**

IN 1998, at the age of 24 with much of his life still in front of him, Logan McMullen lost his sight as a result of traumatic injuries sustained in a car accident.

Losing his sight as an adult has been a challenge as Logan has had to learn to use his other senses to transition back into society. One of the first major challenges was to re-train and find a way to enter the workforce as a blind person. Prior to loosing his sight Logan worked in the military as a chef.

"I found that there weren't many jobs for a blind cook who could blow things up!" Logan laughs.

Logan went back to university to study Psychology and Education and later on also pursued Marketing with a focus on Consumer Profiling. He completed university with a double degree.

His first job out of university landed him a position with a local Sports Trust in a role where he worked to promote participation in sports for disabled people. Due to Logan's sports background it was the ideal role for him. However, due to structure and management downsizing Logan's role was terminated.

Fleeting from one short term contract to another, and working hard to overcome the misconception held by many prospective employers that a blind person couldn't do the same job as a sighted applicant, Logan began developing his general computer skills and ultimately started up a company, training sighted people how to use their computer.

Later he moved on to work for the Royal New Zealand Foundation of the Blind in the role of Fundraising Team Manager for the south island and then on to Adaptive Technology Consultant. His passion for technology has lead him into a role which feeds his love for exploring new technology and the opportunity to share them with other blind and partially sighted people.

Computers with babbling screen readers, magnification aides, talking mobile phones, Braille displays and various GPS equipment are just some of the devices and gadgets found on Logan's desk.

"I'm a geek I guess but don't tell anyone!" he says.

Another of the ongoing challenges faced by this staunchly independent man was his ability, or inability at times, to quickly and efficiently navigate around new or unfamiliar areas.

“Living in the dark means a simple task such as learning a new bus route, can be a highly frustrating and alarming process, not to mention learning which bus stop is mine!” Logan chuckles.

His ongoing need to be fully independent, his fierce stubbornness and love of gadgets saw Logan trying to work out ways he could use the same navigation aides available to his sighted peers.

Hours spent on Google maps finding directions and creating text files with the route directions was his first step into assisted navigation.

Logan used the text files and downloaded it on his mobile and prior to leaving for the day he would find the route from his mobile and listen to it on his phone. It was far from perfect but it worked. Logan knew he could improve the system and sought ways to use packages such as Nokia Maps, Google Earth and other navigational packages which could be linked to his accessible phone.

More hours spent online – researching and trialing eventually had Logan come across a free Open Source GPS project called Loadstone-GPS, a project designed and offered by a group of blind and partially sighted people in the UK. (<http://www.loadstone-gps.com>)

“Loadstone was a real buzz for me. It allowed me to plot and reuse known points via a software package which can be loaded onto my mobile phone!” Logan explained.

Logan began using Loadstone as a part of his personal navigation tool on a daily basis from the moment he discovered it. Although the full potential of accessible GPS based technology didn’t become evident until Logan moved to Christchurch. Logan needed a way to travel independently on foot and by public transport in a new city three times the size of his home city of Hastings.

He wanted to utilize the GPS in his mobile phone for mapping his way around the city. Loadstone provided the platform and Logan needed to upload the points (latitude and longitude coordinates for street/road intersections). It required the user to plot their own points or if available online download points others have plotted.

Logan used Loadstone extensively but because he wasn’t familiar with the street names, he found the plotting of points a challenge. Logan began researching ways in which he could obtain the data he required and despite there being digital maps of most populated areas in New Zealand and the world, Logan encountered some incredible difficulty in obtaining what was reported to be commonly used and public information. Land Information, a government agency owned the information and charged a fee for access to the data. Logan felt strongly opposed to paying a lot of money for what he deemed as public information. The cost of technology let alone information presents a challenge for Logan when all he is after is the very basic freedom to move about independently as sighted people. Two key issues have risen from his quest:

- 1) Should government agencies allow the public access to such information as the points of streets and or routes?
- 2) Even if information was available what costs are associated in turning this information to data that can be compatible to a particular technology for example downloading into mobile phones?

Logan's stubborn streak and persistence lead him to calling hundreds of agencies, businesses and associated professionals to try to source this data. A year later, Logan made his break when he rang a local business named Snitch Inc., a fleet-vehicle tracking company. They dropped the data in a basic raw format for Logan to use. Logan was ecstatic.

"From one extreme to another –no truer statement has ever been said. I had gone from having a small number of points I had mapped myself to a complete spreadsheet with physical name, latitude and longitude of every intersection in New Zealand!" Logan recounted. "Now, the question I had was how the hell I will get all of this data in my phone so I can use it?"

Logan went back to Loadstone GPS project team - the tools that the project developers had designed allowed Logan to convert his raw data into usable databases that he could then import into his Loadstone software and use effectively.

Following on from his successful obtainment of street/road data, Logan began searching for ways he could identify bus stops. The search lead him to local authorities responsible for bus schedules and then ultimately to Connexionz Ltd. Connexionz Ltd. was very helpful in providing Logan a list of all the bus stops in Christchurch.

"I now had a set of databases that allowed me to quickly and independently navigate throughout the city on foot or by bus with little to no hassle in regard to knowing where I was as long as I remembered to charge my GPS receiver and that my guide dog and I agreed!" Logan muses.

"Loadstone is an excellent product –but like anything it has its limitations. The primary one is that it does not have a built-in route calculation process," Logan advises. "The user needs to use online tools to create a route for Loadstone which must then be downloaded, saved and then transferred to the phone on which Loadstone is then installed. A manageable process but not practical when you are out and about or when you need to move off that pre-planned route for any reason," Logan continued.

To address his need for flexibility and automation Logan chose the product Wayfinder Access which is a commercial GPS product rich with features. Used together, Loadstone and Wayfinder, he was able to quickly, efficiently and independently navigate in almost any area. Changing pre-planned route is not so much an issue.

The two products compliment one another and have one essential feature – the software is installed onto an accessible phone –meaning that Logan

doesn't have to carry an additional bit of equipment. Logan carries his mobile phone everywhere so being able to use an everyday device as a navigational aide was very handy. Logan has a KNFB reader which, in addition to being a GPS navigational aide also acts as a scanner, calendar, PDA and many other tools used on a daily basis by Logan.

Like all other technologies, GPS products and more specifically tools designed with accessibility in mind for people with impairments are continuing to evolve. Logan looks to the near future with great expectations.

With the development of talking street signs, drink machines with GPS so blind people can easily locate them, public transport systems with more and more efficient real time data systems and many other navigational aides becoming part of everyday systems; the possibility that we will end up with a truly accessible society is much more of a question of when rather than if.

Being able to quickly use aides such as Loadstone, Wayfinder, the Trekker and other devices is simply the tip of the iceberg. What if all canes had a small GPS receiver and speaker built into the grip? A person using a cane could then be walking past a coffee shop and have it discreetly announced via a Bluetooth earpiece or similar setup! This type of accessible environment could even be extended as part of new building developments – make accessible identification of buildings a part of all future building codes.

It would be valuable for developers to find ways to design navigational aides that's incorporated into objects used on a daily basis like a cane or maybe even a guide dog harness. For Logan his mobile phone is an important piece of item because it gives him multiple functions including navigational aides.

Regardless of what aides are developed, Logan is confident that technology will play an increasing part in the lives of all people –not just the blind and partially sighted.

“We currently use technology in many areas of our lives; in some cases the interaction with that technology is minimal and at other times (example the use of GPS system in car) the interaction is far more commonly used. Regardless of how it is used however; I'm certain that we'll be using it more and more as time goes on and this use will see society becoming more and more accessible to those with all kinds of disabilities,” Logan forecasts.

The Royal New Zealand Foundation of the Blind (RNZFB), whom Logan works for, has a vision that aims to ensure that blind and partially sighted New Zealanders can live as independently within their communities as they choose. A truly accessible society is the ultimate aim of the RNZFB –and other agencies. Technology has been pivotal in moving towards that vision.

Like many areas related to people with disabilities; one of the key inhibitors to ongoing development/advancement of technology is funding. Closely following funding is access to or lack of the key information required to make future developments.

“Cost is a huge barrier to access technology - PDA’s, accessible mobile phones, GPS systems, and computers. A KNFB reader loaded with Wayfinder Access, Talks software and the KNFB scanning software costs about \$NZD5500.00 – making it an aide well beyond the financial reach of many. Sadly, at present the price of independence with the aid of these navigational tools is limited to a wide segment of the disabled community.