

The challenges faced by those with disability at pedestrian actuated crossings and an update of the Neatebox Solution.

Gavin A Neate
CEO Neatebox Ltd

August 2016

The activity of crossing a road is not one which gives the able bodied pedestrian much cause for concern. The greatest risk to safety is in misusing the crossing as it was designed and going outside of normal operation procedures.

Gavin Neate recognised through his 18 years working within the field of independent mobility in the disability sector that for many even when following procedures and using the adaptations designed to aid safety that danger and anxiety was an everyday experience of the disabled pedestrian.

The area of interest to Gavin was in the operation and use of the pedestrian crossing and its access by those with various disabilities.

Pressing a button is of course an easy operation if you are able bodied but incredibly challenging if you are not. If the button is out of reach or the adaptations don't align with the requirements of the user there is a need for the user to ask for help or to take a risk in using the crossing without pressing the button at all. For the able bodied there is always a risk involved in crossing the road in this fashion but this risk is multiplied for the disabled and elderly.

Guide Dog owners and long cane users require to locate the button and then take up position at the kerb edge prior to crossing the road. This activity can lead to misalignment which can be a catalyst for a chain of errors which have the potential to lead to anxiety and poor safety procedures. This risk is increased if the tactile cone is employed in situations where it is outside of the optimum position to be used in conjunction with a mobility aid.

The wheelchair or mobility scooter user is hindered by a multitude of factors including alignment, depth of kerb edge and positioning of the pole and button which prompts the user to have to look for help from an able bodied person. This in turn leads to a degradation of their independence and can force them to use dangerous procedures when no help is available eg purely looking for gaps in the traffic.

As a practitioner with a comprehensive understanding of the end users needs Gavin began looking for a solution which would aid his clients whilst at the same time and equally importantly took into consideration the challenges experienced by the traffic industry in the provision of crossing services.

With an increased use of mobile smart devices in general and the improving accessibility features available as standard within ios, android and windows operating systems it was found that an automatic button press could be developed on a piece of equipment which was becoming an important part of the disabled persons lives, the smart phone and/or wearable. Although this proximity aware button push had been developed using RFID previously these had not proved popular and necessitated the purchase and maintenance of an extra hardware device which only had one purpose. The mobile phone was being used for multiple activities so presented an irresistible alternative.

Initial **Transport Scotland** funded street trials were carried out in 2013 with 11 participants and results were published in **TRL/Halcrow's** March 2014 report "**On Street Trials of Communications Technology to Assist Disabled Pedestrians in Crossing the Road**". Responses were positive and gave feedback allowing for further research and development to be carried out which ultimately led to two more trials and a demo site to be set up in Edinburgh. Trials are now being carried out at **RBS's head office** in Gogarburn Edinburgh and also at the **Scottish Parliament** which will form part of the move towards full certification of this product.

It was recognised through the R&D process that there were several aspects to any new solution which would give it the best chance of success in regards to finding a place in the market. Providing a solution for the initially identified client group was important but the identification of other groups such as those using power or wheelchairs as well as mobility scooters enhanced the offering. Further research identified many more groups including the elderly, MS sufferers and those living with conditions such as dementia and alzheimer's. Ultimately Neatebox became aware that pedestrians living with temporary disablement could also benefit and this included parents pushing prams or simply people carrying items and unable to press the button.

We also added to the functionality of the solution the ability to utilise the technology for the purposes of wayfinding as each hardware point had a very specific id. It was recognised that this was an area of market interest demonstrated by Wayfindr's project to help the visually impaired utilising similar technology for wayfinding in the London Underground

The data capturing ability of the system should also not be overlooked as smart functionality within modern cities is of increasing interest to local authorities and governmental agencies. Neatebox were not initially wishing to become a data gathering company as it was felt that this might lead to distrust of the purpose behind the solution but it was recognised that information could be gleaned without necessarily impinging on the user's privacy and the analysis of movement data forms a large part of the systems market offering.

Conclusion.

Trials are ongoing with three sites in Edinburgh at time of writing with further grant funded and local authority trial sites feeding into the research required for full certification which we are progressing through TOPAS at this time.

Neatebox is looking at both retrofit and integrated solutions and believe that this solution should be available to all parties to aid the independent mobility of those living with temporary and long term mobility challenges.

The challenges faced by those with disability at pedestrian actuated crossings and an update of the Neatebox Solution.

Gavin A Neate
CEO Neatebox Ltd

August 2016

The activity of crossing a road is not one which gives the able bodied pedestrian much cause for concern. The greatest risk to safety is in misusing the crossing as it was designed and going outside of normal operation procedures.

Gavin Neate recognised through his 18 years working within the field of independent mobility in the disability sector that for many even when following procedures and using the adaptations designed to aid safety that danger and anxiety was an everyday experience of the disabled pedestrian.

The area of interest to Gavin was in the operation and use of the pedestrian crossing and its access by those with various disabilities.

Pressing a button is of course an easy operation if you are able bodied but incredibly challenging if you are not. If the button is out of reach or the adaptations don't align with the requirements of the user there is a need for the user to ask for help or to take a risk in using the crossing without pressing the button at all. For the able bodied there is always a risk involved in crossing the road in this fashion but this risk is multiplied for the disabled and elderly.

Guide Dog owners and long cane users require to locate the button and then take up position at the kerb edge prior to crossing the road. This activity can lead to misalignment which can be a catalyst for a chain of errors which have the potential to lead to anxiety and poor safety procedures. This risk is increased if the tactile cone is employed in situations where it is outside of the optimum position to be used in conjunction with a mobility aid.

The wheelchair or mobility scooter user is hindered by a multitude of factors including alignment, depth of kerb edge and positioning of the pole and button which prompts the user to have to look for help from an able bodied person. This in turn leads to a degradation of their independence and can force them to use dangerous procedures when no help is available eg purely looking for gaps in the traffic.

As a practitioner with a comprehensive understanding of the end users needs Gavin began looking for a solution which would aid his clients whilst at the same time and equally importantly took into consideration the challenges experienced by the traffic industry in the provision of crossing services.

With an increased use of mobile smart devices in general and the improving accessibility features available as standard within ios, android and windows operating systems it was found that an automatic button press could be developed on a piece of equipment which was becoming an important part of the disabled persons lives, the smart phone and/or wearable. Although this proximity aware button push had been developed using RFID previously these had not proved popular and necessitated the purchase and maintenance of an extra hardware device which only had one purpose. The mobile phone was being used for multiple activities so presented an irresistible alternative.

Initial **Transport Scotland** funded street trials were carried out in 2013 with 11 participants and results were published in **TRL/Halcrow's** March 2014 report "**On Street Trials of Communications Technology to Assist Disabled Pedestrians in Crossing the Road**". Responses were positive and gave feedback allowing for further research and development to be carried out which ultimately led to two more trials and a demo site to be set up in Edinburgh. Trials are now being carried out at **RBS's head office** in Gogarburn Edinburgh and also at the **Scottish Parliament** which will form part of the move towards full certification of this product.

It was recognised through the R&D process that there were several aspects to any new solution which would give it the best chance of success in regards to finding a place in the market. Providing a solution for the initially identified client group was important but the identification of other groups such as those using power or wheelchairs as well as mobility scooters enhanced the offering. Further research identified many more groups including the elderly, MS sufferers and those living with conditions such as dementia and alzheimer's. Ultimately Neatebox became aware that pedestrians living with temporary disablement could also benefit and this included parents pushing prams or simply people carrying items and unable to press the button.

We also added to the functionality of the solution the ability to utilise the technology for the purposes of wayfinding as each hardware point had a very specific id. It was recognised that this was an area of market interest demonstrated by Wayfindr's project to help the visually impaired utilising similar technology for wayfinding in the London Underground

The data capturing ability of the system should also not be overlooked as smart functionality within modern cities is of increasing interest to local authorities and governmental agencies. Neatebox were not initially wishing to become a data gathering company as it was felt that this might lead to distrust of the purpose behind the solution but it was recognised that information could be gleaned without necessarily impinging on the user's privacy and the analysis of movement data forms a large part of the systems market offering.

Conclusion.

Trials are ongoing with three sites in Edinburgh at time of writing with further grant funded and local authority trial sites feeding into the research required for full certification which we are progressing through TOPAS at this time.

Neatebox is looking at both retrofit and integrated solutions and believe that this solution should be available to all parties to aid the independent mobility of those living with temporary and long term mobility challenges.