

BENTECH BULLETIN

Fourth Edition February 2014

“New technologies – New Abilities”



“NEW TECHNOLOGIES—NEW ABILITIES”

This edition is the start of the second quarter of the Ben’s House Project and the project continues to “mature” and expand. The most important expansion has been in the employment of people to work as contractors for the project.

We also have an expanding group of volunteers who give their time willingly to contribute their expertise, skills and in some cases just their time and effort to do some of the background jobs that are so essential to us achieving our goal.

“It’s supposed to be automatic, but actually you have to push this button.”

The outstanding conclusion that we draw from our survey of 27 people with disabilities is the fact that a very large number of them wanted the ability to be able to get in and out of their front doors independently. We are now able to provide this using the input from a smart phone. We have prototyped the system at BenTech headquarters and are now refining it and expanding the number of inputs that will be on offer to control its operation.

Ben’s House Project Progress

The major achievement in the last few months is the development of an automated door. The door is a prototype front door with an automatic door opener attached and is controlled from a smart phone through a Raspberry Pi. On top of the door is a camera which feeds a video image back to the smart phone. This means that when a visitor rings the front door the image will come up on the phone and the user can see who is at the door and

communicate verbally through the phone and camera. Then a press of a large button under the camera screen on the phone and the door opens to allow the visitor entry.

At this stage the inputs to the system is by a smart phone. What we are working on now is to develop other inputs that will operate the system. That means that a person who



does not have the dexterity to be able to press buttons on a smart phone screen will be able to activate the system with a simple voice command or a flex of a body muscle.

Ken Eaton from Mintrex has completed his final project for his ECU Mechatronics degree and it is very impressive. Ken’s project was to design a kitchen-type cupboard that could be easily accessed by a person in a wheelchair. We have been advisors to the project and Ken has configured the

electronics to interface with the BenTech system. Ken's effort earned him a special commendation for his work from the Vice Chancellor of ECU.

Ken has introduced us to Professor Daryosh Habibi and Dr Douglas Chai from ECU Engineering and they are now "using" BenTech as a source of their final year and post-graduate student projects.

Funding Approval

We had a visit from Ray Peters (Director) and Pearl Craig (Grants Manager) of the Department of Local Government and Communities, our funding agency. Both Ray and Pearl were very impressed with the work that we are doing. Both were also impressed with how we had gone out and connected with the community and brought together people who would not have got together without BenTech. This is added to the benefit the community will receive from the outcomes of the project. Ray and Pearl have approved the payment of our second tranche of funds which has now come through to our account.

BenTech Progress

We have had to spend considerable time on setting up the "organization" of BenTech in recent months. To have a legal identity we have been working towards Bentech Assistive Technologies

becoming incorporated as a not-for-profit organisation. This was advertised just before Christmas and if approved will go through in the next couple of weeks. As well as this, we have been trying to get insurance for the organisation which has proven to be very difficult. The problem is that we do not "fit the mould" of the typical organisation and the insurance companies are very concerned about taking us on as a risk. It is essential that we have coverage of such things as public liability



The Demonstration Case

and workers' compensation. We will get what is required, but it is taking an enormous amount of our time and going to be expensive.

Visitors to BenTech

As well as having Pearl Craig and Ray Peters from Department of Local Government and Communi-

ties visiting we have had a number of visitors in the past few months. We were proud to host the last meeting of the Emerging Technologies group who are a group of people who represent a number of organisations associated with technology for disability. As part of the meeting we did a show and tell session to display the work we had done. In addition, all of our Steering Committee have visited as well as a number of interested people. We welcome visitors at any time, please just ring us and arrange a time.

New Staff

We have now employed three people on contract to do development work for us. All three are final year post-graduate university students who we employ for short or long periods. If we have need for their knowledge and skills we employ them on a continuous contract basis. Our first "contractor" was Tom Pennycott who has done some really fantastic work for us by establishing the foundation of our control system. Tom's task has been to set up the hub system using a Raspberry Pi which can communicate with the smart phone and our door. These communications are at present wireless but are to become internet based which will allow control or monitoring to be done from anywhere in the world with just a smart phone.

One of the other students is working on a simplified

system of voice recognition that will give us the ability to input through the hub with about 15 voice commands. The third student is working on a means of neuro-sensing using EMG signals to input into the system.

Further On The Door

We now have our prototype door operating from a smart phone, to the web and then through a Raspberry Pi hub. This system has proven to be very reliable and versatile.

Having proven the concept it is now easily expandable to different systems of input e.g. voice or neuro sensing and to drive other actuators like windows. Being operated through the web means that the input for operation can be done anywhere in the world that has an internet connection. It also means that the systems can be monitored anywhere in the world.

Another complication of front door operation we discovered from our survey is that many people have a flyscreen door in front of the main door. This means to automate the system totally it would need two door actuators which makes it very expensive as the door openers are a big ticket item. We are looking at this problem and now think we have a more efficient method of having ready access, ventilation and most importantly security.

Wheelchair Program

From our survey visit to the Kimberly we determined that there was a very strong need for a simple, economical and fast system of wheelchair maintenance and repair. Being based in a men's shed it was clear to us that this would be source of expertise in the country centres to carry out that maintenance and repair.

We have floated the idea with several government agencies and the WA Men's Shed Association and all are enthusiastic about the concept. We are now working with the various groups to devise a workable program for the development of the scheme.

Being out of our Bentech brief we do not intend devoting too much time to this project. We see our role as more guidance rather than operational.

Publicity

We have featured in two media publications so far. The local newspaper, The Post did a half page article on us in November and in January we had a full page spread in the Australian Ageing Agenda magazine Technology Review.

A Channel 9 reporter (whose late father was one of our staunchest supporters in the very early founding of BenTech) has expressed an interest in doing a TV segment on our activities.

Visitors Welcome

We like to have visitors at the Bentech Office. We enjoy showing them what we have achieved and where we are heading and often we make new contacts and gain valuable insights.

Visitors also get an insight as to what a Men's Shed is all about.

BenTech Web Site

The web site address is www.bentech.org.au or simply type Bentech Assistive Technologies into Google.

We thank you for your support, your time and your willing participation.

THE BENTECH TEAM



**Department of
Local Government
and Communities**

