

DIY- A simple Environmental Control System Starter-Pack

The thought of environmental control for people with high spinal cord injuries conjures up images of futuristic and complex solutions involving voice activation, automation of every window, door, blind and curtain as well as full control of one's audio visual devices. In the real world however this level of environmental control is neither realistic nor entirely warranted.

Early stages of my recent research study showed that people with high spinal cord injury in fact favoured the simple over the complex. It is true that they did like the idea of voice activation but felt that it was of no use unless entirely reliable (which they thought it was unlikely to be).

Given the current economic situation and increased digital literacy, this article introduces the idea of putting together your own Environmental Control System (ECS) starter pack. This should be easy to set up and to customise as well as affordable. A starter pack could offer the potential to be upgraded to a complex system in the future if desired and if financially possible.

In this article I share my thoughts on how to compile an ECS starter pack based on my research experience in doing so. Reproducing such a starter pack is not about replication, but rather about putting a few compatible things together to suit your own needs. The features of the component parts are more important than the specific products. This is not a recipe but rather a list of items that would be required to get started using environmental controls.

The contents of a starter pack

1. Controller

The controller needs to be simple to programme so that you/someone you know can programme the device. This means that you can choose how to use it, how it is set up and what things you programme it to do. For some that may only be changing channels on a television while for others they may control several devices in several rooms. The controller also needs to be accessible – depending on your injury. Most controllers are switch accessible allowing the choice of a suitable switch. It is also possible to access a controller directly using a touch screen with your finger, knuckle, splint or mouthstick.

I used the Proteor KEO Bluetooth, other suitable options include the Possum Primo and the Unique Perspectives Housemate which uses an Android phone as its display.



2. Mounts

It is tempting to avoid using a mount, but doing so means seeing and accessing



your devices is less reliable and will be more prone to damage. A suitable mount is required for both the controller and a switch (ie two mounts). It may be possible to integrate mounts with existing things such as powered wheelchair chin controls or headrests. If this is not possible or suitable, stand-alone mounts are required. It must be possible to secure the mount to both the wheelchair and to a bed, or bed table which is why I favour a clamp type base on mounts. I used two adjustable mounts – the magic arm mount and the flexi mount.

3. Switches

If you can't touch the controller and its buttons reliably you will need a switch. Some people only need a switch when lying down because it is harder to use your arms in bed. You may need to use a switch both in bed and while seated in your wheelchair.

There are a large variety of switches available. Ranging from lever type to buddy buttons to very light switches. Choosing a switch depends on ability and preference. If you have some arm movement a large buddy

button may be preferential, but for a switch mounted on a chin control a small switch like a micro lever or a mini cup may be best.

Switches need to be positioned so that you can use them reliably. This can be done using a switch mount or it may be mounted to your wheelchair headrest or chin control. It is also possible to get a chin switch mounted on a transparent plastic necklace. I used chin switch, micro lever, mini cup and a micro light switch



4. Other things that you may include

It is possible to purchase infra-red electrical sockets. These allow you to switch power sockets on and off using an ECS. They are ideal for controlling lamps and fans.

It is also possible to control a mobile telephone with some of the ECS controllers. The Housemate for example is integrated into an android smart phone so it includes phone control allowing dialling and receiving calls and text messages.



Putting it all together

Putting the pack together requires a few steps and will require the manufacturers manual for technical programming steps. A helper with some tech-savvy is advised.

1. Position the controller where you can clearly see the screen using a suitable mount
2. Position the switch where you can control it reliably (i.e. touch it several times in a short time exactly when you want to) using a mount or by mounting it to a headrest, chin control or similar.
3. Decide what things you want to control – these must have their own infra-red remote controls. For example: TV, SKY, radio, DVD player.
4. Identify which functions you will need for each device For example channel up, channel down, fast forward, rewind, pause
5. Decide on the layout of your controller – where you want each function to be located on the menu screen.
6. Create the menu structures.
7. Teach the controller the required IR signals from the source remote control one at a time.
8. Test each signal
9. Practice using each button on all menus and moving between menus

10. Start with slow scanning, but increase this as you get the hang of it.
11. Practice, practice
13. Enjoy
14. Add more items

Upgrading the starter pack

To upgrade a starter pack is likely to require the services of a specialist assistive technology company or similar. Add-ons include infra-red controlled land line telephones, door openers, intercoms, and control of windows and blinds.

For more detail: see The GrEAT pack: Generic electronic assistive technology environmental control system – information booklet available for download at : <http://hdl.handle.net/10468/579>

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New Power Wheelchair Control System Launch

A new power wheelchair control system which greatly improves the user ride experience is being launched at Rehacare 2012. Dynamic Controls is launching its LiNX power control system at this year's exhibition.

LiNX Power Control System

The LiNX control system uses new load compensation techniques to vastly improve the user's ride experience. The technology gives superior chair control on difficult surfaces such as easier turning on thick carpets, as well as greater hold and stability on sloping surfaces.

The new system also heralds a revolutionary advance in programming freedom through wireless connectivity to PCs and iOS devices.

The new system will be exhibited at the Rehacare 2012 Exhibition, in Dusseldorf, Germany.

In addition to the LiNX system, Dynamic Controls will also be showcasing the next generation of its iPortal system - the iPortal Bluetooth Mouse Mover.

This latest addition to the iPortal range of products gives power wheelchair users control of their personal computers and portable computing devices using their power wheelchair joystick or specialty input devices.

**Dynamic Controls' iPortal System**

Dynamic Controls' iPortal Mouse Mover allows users to access the web, browse online stores, write documents, pay bills, make phone calls and have full control of their computer and the online world through their wheelchair.

In addition, iPortal Mouse Mover can be upgraded via the App store to include accessibility, pioneering functionality that gives the user full access to Apple iOS devices. Environmental control is simple with most infrared and wi-fi systems having interfacing Apps on smart phones and tablets, which are controlled using iPortal.

The Rehacare exhibition will take place from 10-13 October in Dusseldorf, Germany.

Web: <http://www.disabled-world.com/assistivedevices/mobility/wheelchairs/electric/iportal.php#ixzz26L9BmdIQ>

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New Breed of Robotics Aims to Help People Walk Again

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By: Brian X. Chen

Ekso Bionics is one of several companies and research labs that are working on wearable robots made to help disabled people or to make the human body superhuman.

Ekso says it was the first company to introduce a self-contained robotic suit, without any tethers to, say, a power supply. And though its suits for the disabled are now used only in rehabilitation centers, it is looking ahead to a day when they will let people take to the sidewalks, the shopping malls, and maybe even the woods.

