Taking Control

Environmental Control Units

The brains of any environmental control system (ECS) is the control unit (ECU). This is the processor that takes a signal from a switch and then controls selected appliances and devices.

Control units vary in terms of availability, cost and features. This article is intended to provide basic information for you to assess your own needs, possible uses and preferred features of a control unit.

Transmissions methods
(How the control unit ‘talks’ to the devices)

- Infra red (IR) is the most common transmission method for ECSs. It is used in home entertainment systems making it easy to use. Most appliances have their own unique set of codes. These IR codes can be copied to a control unit which can then be used as if it were the original remote control. It is sometimes possible to do this yourself at home (following the instruction manual) allowing you to add new devices as you purchase them.

- An IR control unit works like a TV remote and the signal can be blocked as it needs direct line of sight or reflective surfaces to bounce signals off. This means that you need to be in the same room to operate a device. Another pitfall is that it the control units can be light sensitive and thus not work in bright light

- Direct wiring - X10, is the basis of commercial home automation in northern America. It uses a house's existing wiring to connect appliances to a control unit. The control unit is plugged into a power socket and transmits codes over the wires. Each appliance is plugged into a module which contains a receiver to interpret these codes. The control unit identifies an appliance then selects function to be performed. This method is relatively inexpensive but is prone to ‘interference’ due to surges in power and may be unreliable as a result.

- RF Radio Frequency transmission is most commonly used to control garage doors, and does not rely on line of sight and thus can be used in another room. RF is still used by several ECS.

- Bluetooth - is the newest wireless technology used by ECS and is expected to be included in new ECS. It does not require line of sight.

- Combinations – control units may be capable of any of the above methods of transmission.

Features:
Input (how you operate the controller)
Direct access is possible on most control units using push buttons, soft touch keys or touch screens. If you are capable of direct access, a mainstream universal remote control may be suitable.

Switch access is essential for most ECS users. Control units have between one and four switch sockets to allow simple single selection switch or more complex multi switch selection methods.

Joystick control is possible as some control units have specialised ports for connecting to power wheelchairs. (Please consult your wheelchair and ECS suppliers).

Display
The older control units have buttons that light up during scanning and selection while newer ones have LCD screens. These can be colour or monochromatic, and may have backlighting for use in sunlight.

Buttons are labelled using numbers, stickers, pictures, or icons and may require the user to memorise functions.

Feedback is important for some users, with cognitive difficulties, but can be useful for everyone. This can be as simple as lights on buttons or buzzers and beeps, or as advanced as spoken prompts.

Size and weight
Control units vary in size from as small as a mobile phone to as large as a laptop computer. Similarly they can vary in weight from a few hundred grams to over a kilogramme. Size and weight will determine how the device is carried or mounted.

Power
Control units are battery operated. These may be rechargeable or disposable and thus battery life varies from several months to a few hours.

Capacity and programming
(How many signals the control unit can transmit?)
Control units can transmit a few signals or a few hundred signals. Personal requirements can vary from simply needing to open one door and turn on one light, to managing several entertainment systems, door access and telephone (including stored numbers). How control units are programmed and or trained varies. Training involves learning a signal from an original remote and can be tedious. More complex programming may require a computer and or a supply companies involvement.

Other things
Some other less obvious considerations include – durability, waterproofing, ease of mounting the device, aesthetics and is it a target for theft or ‘fiddling with’ by others?

Conclusion
The control unit is often considered a single assistive technology item. It is sometimes possible to obtain funding for the control unit, but this is useless without an input (switch) and some appliances, so in seeking funding or planning a private purchase.
My name is Mai Ryan. I am a native of Tipperary and was a qualified nurse when I had a road traffic accident 31 years ago. This left me with a complete C4 spinal cord injury. When I returned home after rehabilitation in the National Rehabilitation Hospital there was always someone on hand to turn on the TV so I did not use any environmental controls. I now live in Cuan Aoibheann residential unit in St. Mary’s Hospital in the Phoenix Park in Dublin. It was here that I was introduced to the benefits of using a Prog (GEWA). This system controls appliances such as the TV, Radio and DVD. I use it all the time and, now that I know the extent of what it can do, I would not like to be without it.

I can control the Prog through a simple “sip” and/or “puff” into a mouth tube. This enables me to answer the phone with one sip and/or dial nine memorised numbers i.e. one puff for 1st number, two puffs for 2nd number and so on. If I need to dial other numbers I use a mouth stick. I find it handier to use a speaker phone rather than use a head set.

The Central Remedial Clinic set the system up for me in 1994 and if anything goes wrong with it I just give them a call and they come out and repair it. I also use my computer a lot but just with a stick that I put in my mouth with a rubber at the end of it. I have tried audio books but tend to fall asleep listening to them so I prefer to use my mouth stick to turn pages and manage to read loads this way.

In 1990, Mai began attending art classes with the IWA and in 2000 joined the Mouth & Foot Painting Association. Not able to use her hands to paint, she instead used her mouth. “It all happened when I realised my limitations were merely physical and that, spiritually and creatively, I was capable of achieving things that were important to me. By painting, I now have the freedom to express myself in ways I thought I never would again,” she says. In 1997, Mai undertook a two-year course in Dún Laoghaire and was awarded a certificate with distinction. Mai held her own exhibition ‘Images and Inspirations’ in Cabra Library, where she sold 34 paintings and had another ten commissioned. Mai is eagerly awaiting the next art workshop holiday organised by the MFPA and speaks highly of the work done by this organisation.