ONECOTA interview with Dr Kevin Doughty, Director, Centre for Usable Home Technology (CUHTec), University of York & Newcastle University.

ONECOTA: How would you characterise the change in assistive and enabling technologies over the past five years or so?

Dr Doughty: We used to think of assistive devices as either

- clunky bits of metal or machinery that helped physically disabled people to get up or move around, or
- items of clothing that people with poor dexterity could easily put on or take off, or
- bathroom equipment for people who struggled to bathe safely, or
- products that can help overcome the problems of incontinence.

They may have been functional, but their design was anything but attractive; they were usually produced in one colour only and adopted a one size fits all approach. They were anything but cool.

In recent years, designers have appreciated that it is not only disabled people who need a little help to perform domestic tasks. They’ve realised that as the world ages, the market is so great that people will appreciate choice and will choose style when that’s offered to them. Consequently, the market has blossomed and has been extended to include electronic devices that have intelligence and which can adapt to the individual needs of users. Such devices are capable of being miniaturised and mass produced at low cost and are therefore much easier to use. This enables the quality of life of far more people to be improved.

ONECOTA: What do older people want from assistive technologies in their home?

Dr Doughty: Older people, in common with younger disabled people, want their homes to be their personal domains, decorated with furniture and furnishings of their choosing and in the colours that appeal to them. Assistive technologies must therefore perform the function for which they were intended i.e. to help an individual to perform a particular task or sequence of tasks, reliably, safely and to a standard that satisfies them. But secondly, it must either blend into the home environment so that it doesn’t become a badge of infirmity, or it must be small enough to be kept out of the way and brought in quickly when needed. If an item of technology can combine these attributes then older people will accept it and want it in their homes.

ONECOTA: From the UK & European experience, what are some of the current assistive technologies providing the most benefit for older people?
Dr Doughty: As more and more older people develop long term conditions that need to be managed by medication, often several times a day, the need for support through prompts and reminders because increasingly relevant. To many, the problems don’t stop with remembering that it’s time for medication, it’s understanding which ones each time because they could easily be prescribed 10 or more different ones, each with different administration times.

One product that has been very successful in many different formats is a flying saucer-shaped device called the Careousel in its native Sweden (but Pivotell in many other countries including the UK). It houses a 28 compartment cassette which a pharmacist of the individual’s family loads with appropriate medication. It is then programmed to alert and present medication at the right time. If the alert is ignored then, in some versions, there are options for a call to be made by someone from a monitoring centre. When the time window closes, the cassette rotates to deny further access to that medication, thus avoiding the possibility of two doses being taken within a very short period of time.

The use of this device has given many people the confidence to take charge of their own medication, and no longer requires carers to turn up simply to check that medication is being taken.

**ONECOTA:** What are some of the pitfalls to look out for with these technologies?

Dr Doughty: It is easy to forget that technology isn’t perfect. Our generation may be used to computers freezing up, and wifi systems needing to be reset. Older people who are being exposed to this type of technology for the first time fear that they might break it and, worst still, do something that will physically endanger someone’s lives. If they had used industrial machinery during their working days then they would have known that lives could be lost when someone made a mistake, and errors could lead to major faults that could shut-down a production line.

It follows that any type of error or fault needs to be anticipated and either automatically dealt with or made so insignificant that it won’t cause the user the abandon it at the first sign of a problem.

Other pitfalls include designers failing to appreciate some of the natural problems facing older or disabled people. These might include difficulties in seeing small text or in hearing certain words or sounds (especially if they are high-pitched), or in understanding the problems that someone with arthritic fingers might have in pressing small buttons or in operating slider controls.

**ONECOTA:** Blue sky: what are some of the technologies or innovations you see holding the most promise over the next five years? decade?

Dr Doughty: I could suggest many potential inventions but will restrict myself to three:
The first is artificial vision, which could be in a pair of spectacles that guide a blind person safely around their environment, but it could also be the system that enables a car to be driven by automatically and without a driver. It means that we could all have a personal chauffeur who is programmed to avoid accidents and to obey the law. It would make us all equal in terms of our ability to travel any distance independently.

The second is the exo-skeleton or parts of such a skeleton which use electromechanical actuators (or electronic muscles) to help people with limited mobility to overcome their physical deficits and to be able to climb stairs and walk further. Exoskeletons are already available but will become more efficient and more aesthetically pleasing over time. Their emergence could make stair lifts and other walking aids redundant very quickly.

My final innovation is the genuinely wise home that looks after the people who live in it. It will contain an array of linked sensors that talk to each other and to switches and valves that can avoid environmental problems such as floods and gas leaks by controlling the flow of water and gas, as well as through the control of electrical appliances. More importantly, it links with the inhabitants and their needs and preferences, taking over control only when appropriate. Advanced communications will allow it to learn and to make suggestions in ways that we can’t yet imagine.

**ONECOTA: Any other issue you think might be interesting or you'd like to discuss with Australian media?**

DR Doughty: I believe that the lack of awareness of technologies, telecare and telehealth are major problems to their role out in all countries. Clearly, professionals in housing, social care and health need both awareness training and specialist training in the technologies so that they can try to match devices to the assessed needs of potential users. But these efforts may be compromised if the general population aren’t aware of the technologies and what they can do. Without this knowledge, they will continue to think that care has to be provided in the same old ways – which are no longer affordable and which actually take control away from individuals.

Who should take responsibility for raising the awareness of the public? Should it be equipment providers – who would certainly benefit from increased sales? Should it be service providers – whose businesses will be transformed by a move towards using technology to provide person-centred care? Should it be the government, who will see the cost of provide care and support reduced through the introduction of such technologies? Or should it be someone else – groups who are trusted by the people and who have no obvious vested interest in promoting technologies?

In England (not the UK) the government passed responsibility on to the 3 Million Lives group of equipment and service providers. In my opinion, they failed miserably perhaps because they were simply trying to sell more equipment, or perhaps they were promoting a model of telecare or telehealth which is out of date. How might such a campaign be run in Australia?