Technology Enhancement - A full role for the elderly (PDF of the Powerpoint)

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Technology enhancement – a full role for the Elderly

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Sequence

1. Differentiating between the Young Old and the Old Old
   1. - most surveys stop at 55+ -- quite inadequate and obscures the issues
   2. - Young Old up to 70? 75? - burgeoning capable numbers of people
   3. - Old Old >85? – the domain usually brought to mind as Old
   4. - Effects of fast-climbing education levels -> into these age groups

2. Assistive technology, Supportive technology, Enabling technology

3. Highlighting some augmentations obvious to the ‘Elderly’ but so far generally missed by the ‘Young’

3. Examining why an undifferentiated dependency model is predominantly used for such work ‘for the Elderly’

4. Suggesting that altered governance of such work would be of direct and immediate benefit to all parties
The Emergent Tech-Savvy Older Population

Understanding Age and Technology Experience Differences in Use of Prior Knowledge

Younger Adults
- New: 16%
- Infrequent: 18%
- Frequent: 66%

High Tech Older Adults
- New: 9%
- Infrequent: 17%
- Frequent: 74%

Low Tech Older Adults
- New: 4%
- Infrequent: 21%
- Frequent: 75%

Fig. 1. Percentage of all reported technologies from participants’ inventories and journals. Frequent refers to typical use at least once per week. Infrequent refers to typical use less than once per week. New refers to technologies and/or features never used before.

Here ‘Younger’ Adults are 18-28 and ‘Older’ are 65-75

Many ‘old’ myths are just that- as current populations age

Demands by Elderly groups to lead and take an active part in technology engagement in their own interest are already here

The current [US] senior population has limited engagement healthcare technology. Two-thirds of seniors surveyed by Accenture said access to health information is important, but only 28% have full access to their electronic health records. Almost 60% want to email providers, but only 15% say they currently have that capability.

“Just as seniors are turning to the Internet for banking, shopping, entertainment and communications, they also expect to handle certain aspects of their healthcare services online,”

Impacts of lagging stereotypes of the Elderly

Rising cognitive levels

Evidence has been growing that cognitive functioning at a given age has been improving over time through a generational effect. Freedman found that the cognitive performance of 80 years olds in 1998 exceeded that of those of the same age measured in the early 1990s (Freedman, 2001)

Ignoring social and fiscal contribution levels

A common political strategy is to focus on the generation after the retiring Boomers, to drive a division between the Boomers and the subsequent generation (X) as a politically expedient means of diminishing the influence of the growing elderly generations as whole, and playing up the ‘burden’ argument to the elderly in general. So far this has been a fairly successful political strategy, but is unlikely to remain as unchallenged as it currently is (Wigan, 2013).
Roles vary by type of technology targeting

With these terms come very different perspectives

Assistive technology (a dependency framing)
- Usually used in terms of ‘age care’ emergency, communications and surveillance technologies (http://www.aaate.net/sites/default/files/AAATEworkshopSheffield2010_proceedings.pdf#page=53)

Supportive technology (an augmentation framing)
- A term suggested for recovering pre-existing capacities (http://www.inclusivedesigntoolkit.com/betterdesign2/ http://designingwithpeople.rca.ac.uk www.sus-it.lboro.ac.uk) Other examples include Driverless Cars etc

Enabling technology (an enhancement framing)
Overlaps with disability support enabling capacities that would otherwise be lost, but also applies to enhancement of fully-abled people. Sometimes also expressed as Augmentation (“The computer is one of the 5 C’s in my life – the others being children, car, church and cat” Howard 78; If they had to give up using their computers.”Very upset - it's my window on the world. It helps me with my interests and hobbies. I'd be giving up much more than just a computer” Marcia, aged 76 “If I had to give up using a computer I would be devastated, completely cut off from the world” Alun 81(sus-it)
Assistive Technology – Domestic Robots

**Elderly-expressed requirements for robotic support..**

....elderly people worrying the most about a personal cognitive weakening showed a stronger confidence that the robot would make people feel tranquil at home...

....the elderly who showed a higher apprehension for the weakening of cognitive competence expressed a more positive emotional reaction to the robot, being the agent perceived as more pleasant, useful and dynamic, and less overwhelming...

...the issue of acceptability of robotic agents in everyday life of elderly people..... the role of a domestic robot in the everyday experience of elderly people clearly emerged. In their eyes, the robot is perceived as a practical device, with one physical key feature: it should not resemble a human being....

Why talk about this subject today?

- I was asked last year as an Elderly person to respond to a survey on emergency assistance for the aged.
- Project survey framed in a dependency, emergency support and non-consultative mode.
- No useable questions on technology awareness, needs or suggestions from the subject group provided.
- The address today arose initially from a wish to make such surveys more useful to the elderly by acting to:
  - Draw on modern pervasive technologies.
  - Focus on a key issue (falls).
  - Highlight a modern approach to mobility barriers.
  - Emphasise the need for appropriate elderly in a governance role.
Illustrative Suggestions made

1. Use of smart phones, with or without additional sensors, to diagnose emergencies and communicate

2. Minimal exoskeletons for anti-fall stability

3. Mobility solutions that include access AND egress from public transport

Common factors

1. Not considered due to paternalistic framing of ‘elderly clients’

2. Exclusion of such clients in design and execution of such work

3. Barriers – especially regulatory ones – neither recognised nor addressed
Smart phones as easy user-led augmentation

1. Accelerometers and GPS are standard: ECGs, Blood sugar levels etc within current scope

2. So.. using largely already available tools (mid 2013)- falls could be diagnosed for energy transfer (impact severity), diabetic comas or epileptic episodes

3. The correct emergency medical care numbers can then be called scaled for severity with the data.. plus structured sequences of calls to family etc

4. The Elderly must be involved in active governance and researcher roles: The Role of older people in identifying & developing solutions “Despite experiencing challenges and problems, it is evident that older people are often exceptionally tenacious in trying to remain digitally connected”.. “Older people have been core participants throughout the research process to identify solutions to prevent or postpone disengagement. They have actively participated in sandpits to shape design of future ICTs, evaluation and testing of software, and problem solving workshops to specify their requirements for provision of ICT learning and support(sus-it)
A key current research program

EU Framework I-DONT-FALL (http://www.idontfall.eu/)
“deploys, pilots and evaluates a range of innovative ICT solutions for fall detection and prevention management. The platform will be flexibly configured to the needs of specific target groups and risk factors associated with fall incidents”.

- Uses a centralised E-Medicine database Knowledge base and a special fall sensor device.
- Uses a special gait sensor and trainer trolley

No civil society body included in the Partners

Sadly no attention is paid to direct stability support by minimal intelligent lightweight exoskeletons
Some existing Apps/sensors in early 2013

1. ECG: [www.alivecor.com](http://www.alivecor.com) iPhone
4. Many more that collect life data with minimal or no sensors required (FitBit etc)
5. These illustrate that already many of the specialised solutions can be handled by standard devices already carried by many elderly as telephones, in many cases even without external sensors.
6. This suggests that a client-centred view would yield significant benefits as well as enhanced engagement
Mobility Augmentation

1. An unfortunate ‘access’ criterion to transit is being within 400m of a bus/train stop.

2. This doesn’t work for many of even the Young Old

3. Consider Young Old as up to 75, Old Old as 75+

4. Even this threshold is rising..
   1. - 400m is more than many can always manage
   2. - it does not include actual services at these points
   3. - it omits the necessary access to the end destination

So what Mobility Augmentation is needed?
A Proposed Performance Based Standard

1. 10kg total mass (portability, with or without roller wheels)
2. Limited to 25 km/hr, minimum range 20km
3. Electrically powered, rechargeable from the mains
4. ABS, high intensity LED lighting, fail safe controller
5. This will require 450w for other than flat surfaces, as manual ancillary power will not be available in 10kg

This device category can be carried safely on and off public transit, light aircraft, car boots etc. The YikeBike is 11kg.

Example Video: YikeBike (NZ) [http://www.youtube.com/watch?feature=player_embedded&v=aj3de3_9fvM](http://www.youtube.com/watch?feature=player_embedded&v=aj3de3_9fvM)
Ssike(Catalonia) [http://www.ssike.com/features.html](http://www.ssike.com/features.html)
20 Km/h Top Speed - 50Kms of Range - 12 Kgs of Weight - Lithium Ion Battery - 5 Seconds Fold time : but no pedals!
Transit-friendly mobility… Some illegal in OZ

NZ Exoskeleton: NZ YikeBike; Catalanian folding SSike
Barriers: Technical and Governance

1 Most such vehicles are illegal and cannot meet legal requirements as a bicycle, moped, motorcycle or motor vehicle, and is therefore illegal for use on roads or sidewalks in Australia

2 Why? Because the formal eBike specification has been set to require pedals and their use for ancillary power in the EU and Australia as enforcing ‘Pedelecs’ rather than eBikes and 450w. Ssike it also ruled out

3 This has much merit for the bulk of the population for health, but blocks these and many other forms of mobility augmentation for the elderly

4 Another illustration where engagement (and indeed the availability of relevant elderly expert researchers) has been forgotten
What **is** being done on mobility augmentation?


2. This project focuses on end-to-end travel support using smartphones and is restricted to information.

3. Unusually it is being developed with *active engagement of the target elderly market segment* with multiple design test initiatives in the project design.

4. Active communication to enable unfamiliar system mode changes and stop-related anxieties to be handled.

5. Example for elderly mobility augmentation helping all parties, especially tourists and occasional users of public transport. A common call by & for the disabled.
Elderly Monitoring but not Self Empowered

1. GPS is already being used to monitor the elderly simply for institutional convenience, even those without Alzheimers

2. *Memoto* (a full life logging microcamera) is a likely next step. And includes cloud based storage

3. Used in surveillance modes, with their retrospective examination built in, these devices severely constrain the life space of those subjected to their enforced usage

4. The assumption that these are appropriate for the elderly is a paternalistic view, excludes any participative governance, and is well out of date.

5. Engagement -> exception reporting with disclosure
An example of an Elderly co-design process

What older people want:

A catalogue of co-designed ICT concepts

David Frohlich¹, Christopher Lim¹, Sarah Woods¹, Amr Ahmed²
¹ University of Surrey, ² University of Lincoln

• A custom computer for older people
• Supporting memory and identity in later life
• Combating social isolation
• iPad apps for older People

Examples of Elderly co-and re-design [dwrc]

Augmented-reality goggles

- Goggle-like design to accommodate spectacles
- Superimpose old scenes on real life ones, based on old photos from personal or public archives
- Make other content available for new experiences such as extreme sports or travelling to other locations

Non-PC using Elderly group design

Wearable camera and videophone

- Add a camera and microphone to allow users to record their journey and make commentaries
- A USB or memory card slot was integrated for storage and transfer
- Live relay of images and sound to another (housebound) person wearing another pair of glasses
- Remote control to keep glasses lightweight

Pc using Elderly group design

ALL pre Google Glass

Specific assets of older people in participatory design

- Honesty
- Humour
- Life experience
- Long technology history
Some professed good intentions

The Committee notes, however, that no specific mechanism exists under the legislation to include senior Victorians in stakeholder engagement and community participation processes. A strategy for including older people in decision making about transport issues is critical to ensure that the transport needs of senior (i.e.60+) Victorians are met.

Victorian Government Inquiry into Opportunities for Participation of Victorian Seniors (2012)

This is a welcome – if rare - official recognition that the governance processes currently do not include a growing fraction of the population, which is more than capable of such participation, very effectively. Of course, we the Elderly await any substantive enactment...
Why does this paternalistic approach obtain?

1. The Elderly are still stereotyped as one dependent group.
2. The rapid growth in health of the Young Old is ignored.
3. The rising levels of education of this group are ignored.
4. Framing as a ‘costly group to pay for’ due to ignorance of the massive unpriced voluntary and honorary inputs to the economy - and huge time and resource contributions allowing dual income families to stay so.
5. Structural exclusion by age–specific conditions.
6. Lack of awareness that the power holding groups are about to move into the elderly age brackets themselves.
7. Low awareness of the rising number of active researchers available from the elderly age group itself.
And so- lets use the term Augmentation

1. Technology for Augmentation almost inevitably requires data flows and changes to old barriers

2. The ethical and privacy issues of the elderly need to be seriously addressed. This will also benefit the whole community as sensor and LBS surveillance and Big Data integration becomes ever more omnipresent.

3. Augmentation of the Elderly ‘within the house’ needs direct governance engagement, let alone research involvement, to ensure that the Smart House, Internet of Things and Smart Augmentation technologies are designed, implemented and used acceptably.

4. Augmentation of the Elderly ‘outside the house’ requires further governance inclusion
Elderly in appropriate technologies planning

Are visible almost entirely by their absence

- Tegart’s excellent global review of assistive technologies for the elderly took a dependency attitude throughout: Yet –typically - he was himself in this age group (2003).

- The large scale visioning BRAID project by the EU completely omitted governance and leadership by the elderly although claiming to include earlier projects that were aimed specifically at extending the inputs from professionals as they aged (2012).

- As skilled and experienced educated manpower continues to rise in demand, the resources of those prematurely excluded by age will be increasingly needed: let us call it an all too evident wisdom drought.
What do we gain if we do?

“Even in the general population, vocabularies are larger and knowledge about the world is greater in the old as compared to the young. Recent findings suggest that older people are more likely to change attitudes in light of new information, and they appear better able to take the perspective of younger people than younger people are able to adopt perspectives of the old. Presented with cultural and economic disputes over resources, older people generate more even-handed and acceptable solutions than younger counterparts”. (World Economic Forum 2011)

A further argument for the broader formal engagement of Elderly in governance; as well as in initiating, and reviewing, and not being solely the subject of assistive and augmentation technologies.
Conclusion

Technologies of all kinds offer much to the whole community

The Elderly can gain more than most

The Elderly can contribute more than most

IF they are an active part of the governance, design and execution

This will happen only if the current stereotypes and lumping together of 55+ to 90 age groups is changed
Some of the Resources Referred to here

(http://www.aate.net/sites/default/files/AAATEworkshopSheffield2010_proceedings.pdf#page=53)


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