

Stanford Center on Longevity
A TOOLKIT SERIES BRIEF

5 LESSONS TO INNOVATE FOR LONGEVITY

Insights from the Stanford Center
on Longevity Design Challenge

Ken Smith
Director of the Mobility Division
Stanford Center on Longevity

Sasha Johnson-Freyd
Social Science Research Professional
Stanford Center on Longevity

TAKE-HOME POINTS

- Designing for longevity is a significant and untapped business opportunity.
- The Stanford Center on Longevity Design Challenge encourages student teams from around the globe to design solutions for the needs of older generations. Entries are judged by international technology and business experts.
- This brief outlines five important design lessons that emerged from insights drawn from student entries and judges' comments in the Design Challenge.

INTRODUCTION

As our society continues to get older, entrepreneurs and inventors have the opportunity to design products and services that will aid people living lives of unprecedented lengths. Innovating for longevity not only has the potential to improve billions of lives, but it is a huge business opportunity: AARP has estimated that Americans over 50 years of age are responsible for 7.1 trillion dollars of economic activity.¹ Unfortunately, many people have trouble conceptualizing the needs of those living to 80, 100 or even longer.

Many innovators base their assumptions on stereotypes and misinformation about older adults. It can be difficult to entice technology entrepreneurs, who are often very young, to build solutions for people 40 to 80 years their senior. Research shows that young people often struggle to empathize with the needs of older generations. In Silicon Valley and other hubs of innovation, this is exacerbated by a contemporary technology culture centered on young, urban professionals.

Can Stanford help seed a worldwide community of student designers serv-

ing the needs of these long lives in the same way it has inspired some of Silicon Valley's greatest high-tech companies? This is the goal of the Stanford Center on Longevity Design Challenge.

Each year, dozens of student teams from around the globe submit design ideas for a longevity-related topic. Through its website and social media outlets, the Center provides materials throughout the course of the contest that help young designers understand the topic and inform their designs. The students then submit their designs to an online platform, where expert judges with significant experience in the business of aging review the entries and help us select six to 10 finalist teams. Lastly, we bring those finalist student teams to Stanford for the Design Challenge Finals, where they pitch their ideas in front of potential funders and industry leaders in competition for a \$10,000 first prize.

The challenge is financially supported by industry sponsors, which allows us to completely cover the cost of travel to the final event at Stanford for our finalists. Following the Finals, the teams are invited to a Business Plan Development workshop co-hosted with the Center for Entrepreneurial Studies at

the Stanford Graduate School of Business. The Center on Longevity does not claim any intellectual property from the designs, allowing the teams to continue to work freely toward commercialization.

Every year, we learn new lessons from the student design submissions and industry partners. In this brief, we share some of the most important of these insights and illustrate the principles using examples from our 2016 Design Challenge.

For our 2016 challenge, a host of tech luminaries including Om Malik (True Ventures, Gigaom), Josh Constine (Editor-At-Large at TechCrunch) and Amber Case (MIT Media Lab) joined industry sponsors including Halbert Hargrove, Target, Fidelity, Airbnb and Lixil to generously donate their expertise and resources as judges and consultants. The 12 final designs they chose ran the gamut from traditional physical products to digital platforms to Internet of Things devices. These entries illustrate some key principles of innovation today, not just for developers of longevity-related products, but for anyone in consumer product design and entrepreneurship.

LESSON #1: GOOD UNIVERSAL DESIGN TRANSCENDS AGE

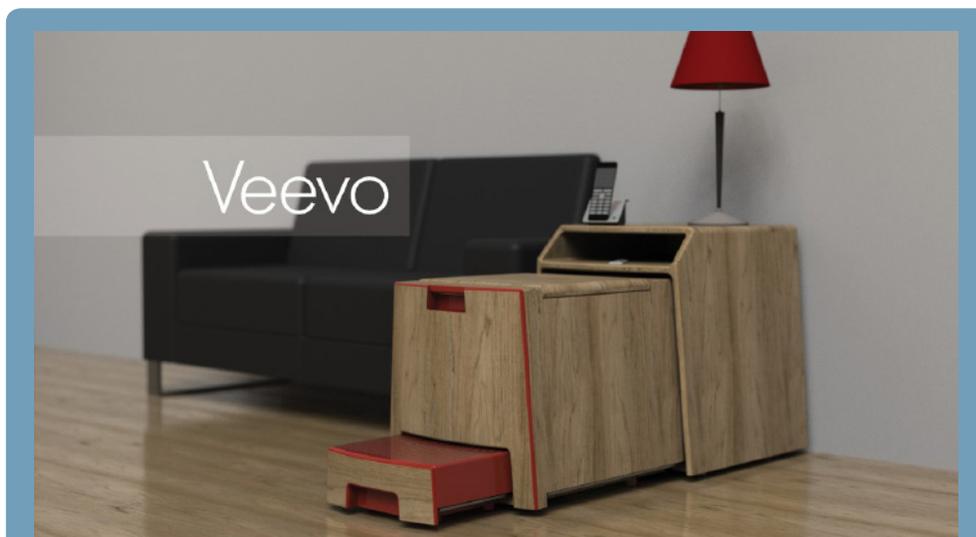
Often, when people think about designing for older adults, they imagine the needs of people who are very old and frail. This population undoubtedly could benefit from better technology, but they are certainly not the only type of older adult. In fact, the needs of older individuals are as diverse as the needs of the general population. The most successful designs are typically also the ones that appeal to people of all ages. Skype, for example, is very successful among older populations (the opportunity to visually interact with grandchildren is highly valued), but Skype is certainly not a “design for old age.”



City Cart, from students at San Francisco State, is a walker/shopping cart hybrid designed for seniors who would typically use a walker to go on short trips in an urban environment. But with its compact frame, easy maneuverability and modern lines, it’s conceivably a handy product for anyone who does their shopping by foot. The team’s 3-D printed prototype was especially effective in helping judges envision uses for the cart.



FILLanthropy, from Stanford students, addresses the idea of “universal” design in another way. Designed around research that indicates that volunteerism improves positive aging, this volunteer matching service is designed to be inclusive of low income and ethnic minority groups to assist communities of all ages.



Veevo, from students at Virginia Tech, is another compelling concept: a workout center designed around strength and balance exercises known to reduce fall risk in seniors, which can be folded up into an attractive end table. Given the need to increase activity at all ages, locating easy exercises in the family room (near the TV) can help the whole population, especially for those in smaller homes and apartments.

LESSON #2: PERSONALIZE DESIGN WHENEVER POSSIBLE

Unsurprisingly, some of the most important design insights when building technology for older adults start with trends well-known to mainstream technology innovators. One of these is leveraging technology to personalize the design to the individual user. Taking this approach landed several teams in the finals of our 2016 Design Challenge, the theme of which was “Using Happiness to Optimize Longevity.”



Memoir Monopoly
A highly flexible, multicomponent rehabilitation game platform for OTs and the elderly living with dementia to engage in interactive activities, including reminiscing, cognitive training, reality orientation, sensory stimulation, and social events.

Memoir Monopoly, from students at the National Taiwan University of Science and Technology, collects personal photos, songs and videos to generate a tablet-based interactive game that occupational therapists play with patients. Their user testing showed a higher level of engagement than generic memory games, since patients recognized game content as being from their own life.



拾時 PicMemory

Pic Memory, an app from National Taiwan University students, also creates personalization for dementia therapy patients but with a different approach: collecting oral history through a voice interface, then linking input to related photos to capture stories that might otherwise be lost.



DEX
GET ACTIVE WITH DEX: A SMART FOOTPAD SYSTEM
By Elyn Wu

Dex, an entry from students at the National University of Singapore, personalizes in the physical domain. An instrumented shoe insole transmits user activity data to a smartphone, where an application compares actual activity levels to individualized exercise recommendations, and then creates foot-based “exergames.” This approach could be used by doctors to prescribe exercise for conditions such as diabetes, while also monitoring exercise adherence objectively. This is especially helpful since self-report activity data is notoriously inaccurate.

LESSON #3: "SMART" EVERYDAY OBJECTS CAN ENCOURAGE SOCIAL INTERACTION

Research shows that social connectedness is an incredibly important component of well-being, especially among older adults. And although few older adults suffer from social isolation, it is toxic when it does occur: Being socially

isolated brings a higher mortality risk than does smoking or being obese.² Luckily, social isolation is a challenge that technology can help improve. In our 2016 Design Challenge, two of our finalists showed that building tech-

nology into everyday things changes them into "systems" that encourage interaction in a fun and non-obtrusive way. Coincidentally, both designs centered around the humble house plant.



Together - Green THE EXPERIENCE

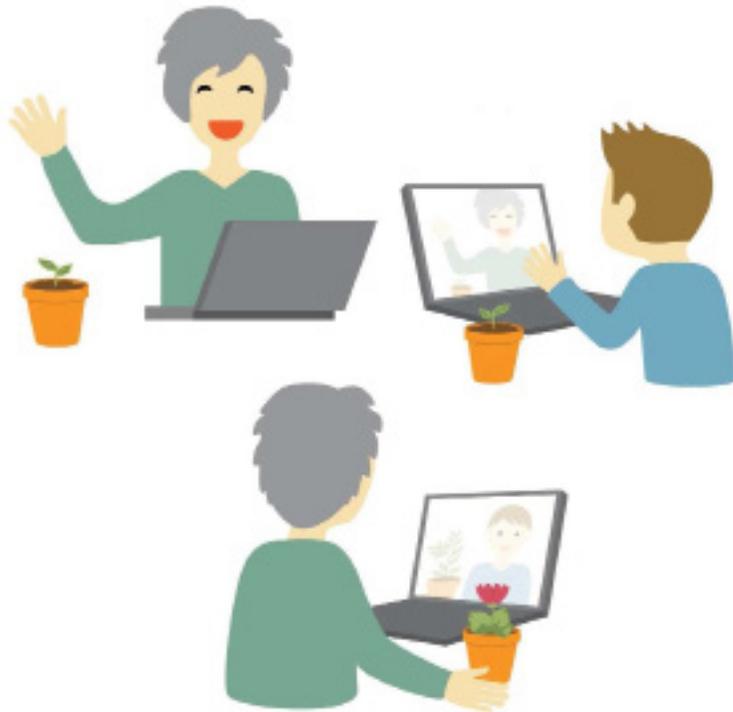


ILLUSTRATION BY ALINKARUPPEL.COM

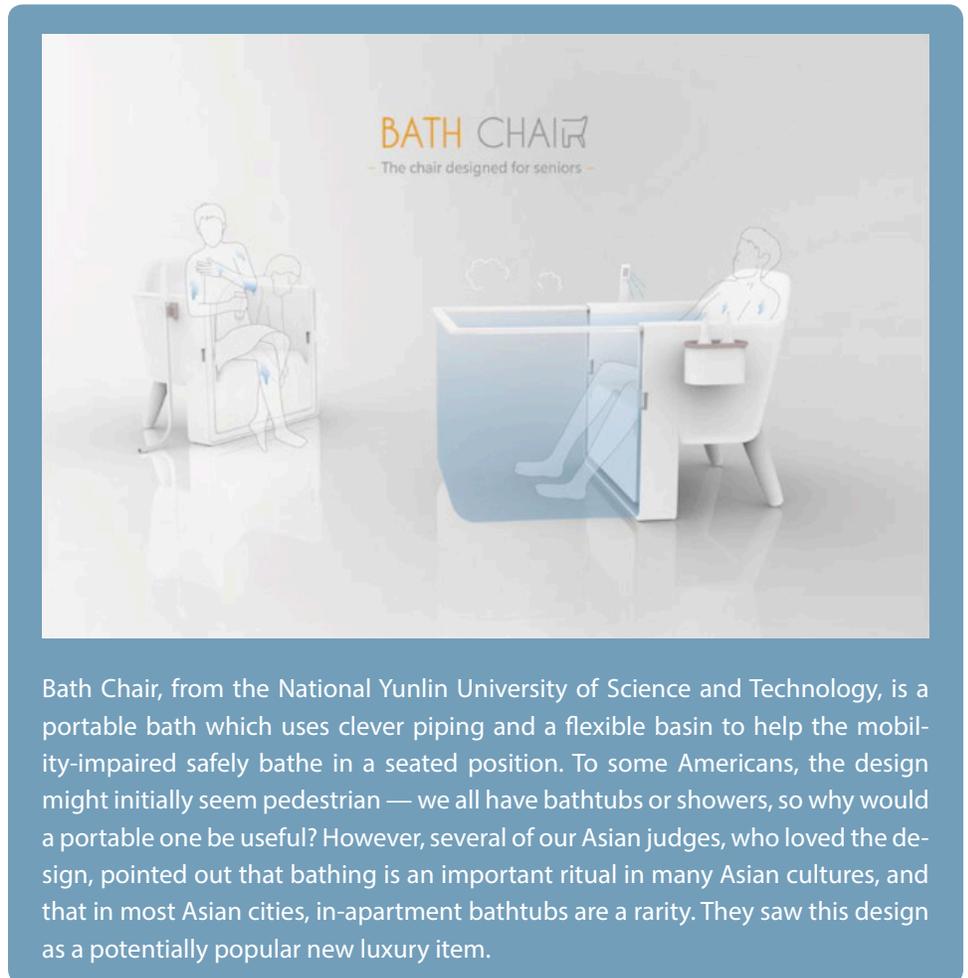
Together-Green, from University of California, Berkeley students, brings together a network of people connected through plant care. Each member nurtures a plant that has a sensor console connected to the Internet. Together-Green's online support network allows users to help each other successfully raise the plants, often by leveraging the expertise of an older member, socially connecting them to younger people along the way.



POTALK, from National Chiao-Tung University students, is built around an automatic watering system for a potted plant. When voices are detected by an attached microphone, the plant receives water. A small display shows the moisture level of the soil, encouraging users to converse more to further water the plant. This type of "ambient display" has been shown to be effective in motivating action³— more social engagement with loved ones, in this case.

LESSON #4: PERCEPTION OF VALUE HAS A GEOGRAPHIC BIAS

The needs of older adults can vary across cultures. This fact can elude designers, who are often told to “design for what they know.” By directly interacting with people from other cultures in their home environment, however, needs can present themselves unexpectedly. In the case of longevity, differences in needs across cultures are often due to the availability of structural support (such as the ubiquity of government programs or community centers) as well as differences in morals and values.



Bath Chair, from the National Yunlin University of Science and Technology, is a portable bath which uses clever piping and a flexible basin to help the mobility-impaired safely bathe in a seated position. To some Americans, the design might initially seem pedestrian — we all have bathtubs or showers, so why would a portable one be useful? However, several of our Asian judges, who loved the design, pointed out that bathing is an important ritual in many Asian cultures, and that in most Asian cities, in-apartment bathtubs are a rarity. They saw this design as a potentially popular new luxury item.



Yedi70, from Koc University in Istanbul, represents a different application of this lesson. This entry was an online platform designed to connect seniors with targeted activities, health information and support. The U.S. already has similar products, but they are much less prevalent in Turkey, where there’s still a great opportunity to help underserved Turkish seniors through online tools.

LESSON #5: DESIGN FOR NEED, NOT FOR AGE

Aging is an event-driven process. Similarly, adoption of aging-related technology is driven by need, not by age. No one decides to use a walker because they just turned 80; they use it when their legs can

no longer support their weight. Similarly, people wear glasses only when their eyesight fails. It's difficult to imagine a successful product launch based on the premise "You've just gotten old. Buy this."

Rather, innovators must analyze the needs of older adults and design solutions for their experiences, not for the date they were born.

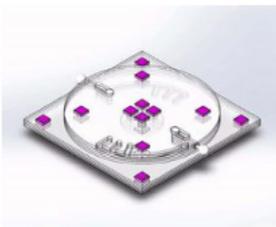
Echo, from students at the National University of Singapore, helps those who have recently become visually impaired learn to navigate their surroundings using sound modules placed in their environment. Age is just one (important) market segment for this product.



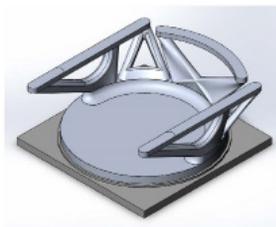
THE STURDY SWIVEL

Allowing the elderly to enter and exit vehicles safely and painlessly

Swivel seat with locking mechanism & supporting handlebars



- Keeps seat stable
- Focus on one movement at a time



- Allow arm strength to support legs/back
- Use to pull or push off

The Sturdy Swivel entry from students at University of California, Berkeley recognizes that getting in and out of vehicles is difficult for those with mobility restrictions, regardless of age. Their solution: a seat that can be used in most cars without modification that rotates the user ninety degrees as they stand, making for a natural vehicle exit.

IMPACT OF THE DESIGN CHALLENGE

Each year, the Stanford Center on Longevity Design Challenge helps student innovators think big and design for longevity. Finalists in the Design Challenge have the opportunity to network and learn from leaders in the technology and business worlds, as well as from researchers and design thinkers at Stanford. The winning team from our first challenge in 2014, Eatwell from Sha Yao at the Academy of Art University in San Francisco, has

already launched in volume. We are optimistic that several of the finalists from 2015, 2016 and upcoming years will join it on the production line.

In the 2016 challenge, City Cart and Memoir Monopoly took home the top prizes for the Mobility and Mind divisions, respectively. For full results and a video summary of the finals, visit the challenge website (<http://designchallenge.stanford.edu/>).



ACTION STEPS

1. Educate yourself about the business value of designing for older adults. One useful resource is AARP's "Innovation at 50+" market research series. Also, learn more about the Design Challenge finalists featured here, and more, on the Design Challenge website (<http://designchallenge.stanford.edu/>).
2. If you are a business leader, encourage those around you to consider business opportunities in the longevity space.
3. If you are an inventor or entrepreneur, learn more about the wealth of available research on the experience and needs of older adults. The Stanford Center on Longevity's website at <http://longevity.stanford.edu> is a good place to start.
4. Ask older people in your life about their needs and experiences with certain products.
5. Imagine what your desires and needs will be when you are 20, 40 or even 60 years older than you are right now. How will they be the same or different from your current conditions?

CITATIONS

1. "The Longevity Economy: Generating economic growth and new opportunities for business," *Oxford Economics*, <http://www.aarp.org/content/dam/aarp/home-and-family/personal-technology/2013-10/Longevity-Economy-Generating-New-Growth-AARP.pdf>
2. Pantell, M., Rehkopf, D., Jutte, D., Syme, S. L., Balmes, J., & Adler, N. (2013). Social isolation: a predictor of mortality comparable to traditional clinical risk factors. *American journal of public health*, 103(11), 2056-2062.
3. Consolvo, S., McDonald, D. W., & Landay, J. A. (2009, April). Theory-driven design strategies for technologies that support behavior change in everyday life. In *Proceedings of the SIGCHI conference on human factors in computing systems* (pp. 405-414). ACM.

The mission of the Stanford Center on Longevity is to redesign long life. The Center studies the nature and development of the human life span, looking for innovative ways to use science and technology to solve the problems of people over 50 in order to improve the well-being of people of all ages.



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