



KARTEN:DESIGN

A Visual White Paper Series

Vol. / 02

Designing the Second Half of Life: Innovation for Aging

Healthcare is in flux. It can be an intimidating time, but it's also a time of great opportunity for companies that can understand the movement and the human needs driving it, and respond with meaningful innovation.

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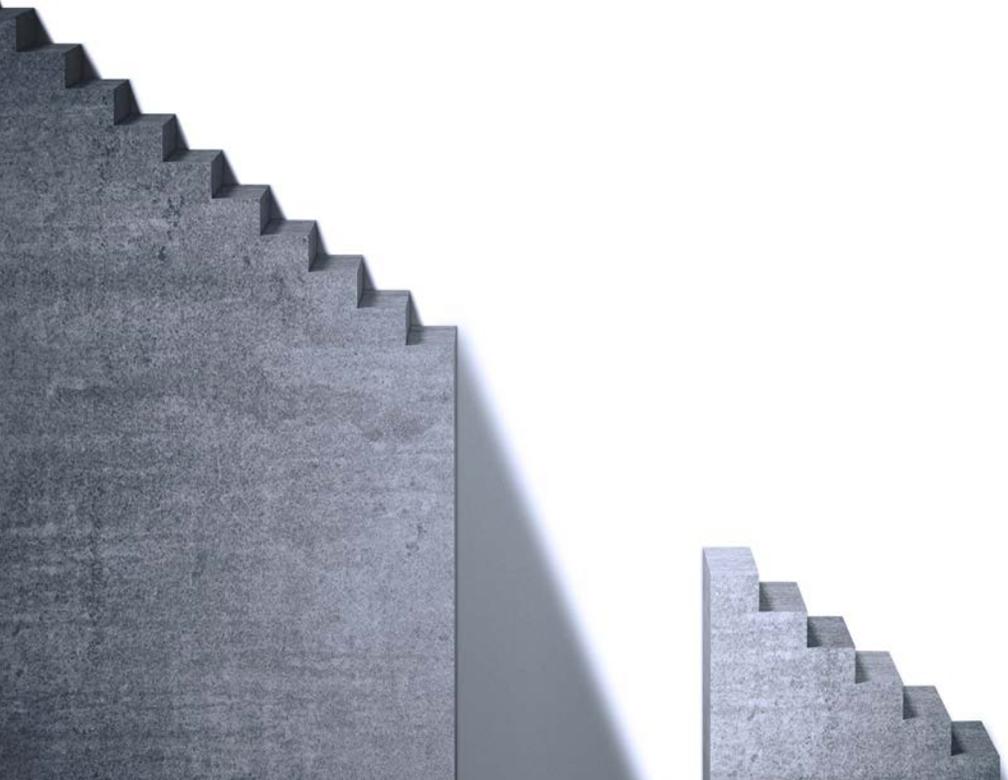
A Visual White Paper Series

For the past 30 years, Karten Design has been creating extraordinary experiences between people and products. In that time, we've learned a lot about people, emotion, and behavior. Our Outsights series takes these learnings and applies them to current trends in medicine and health, giving product developers the keys to creating exciting, successful solutions that stick.

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Designing the Second Half of Life: Innovation for Aging

The next 30 years will be a defining era for the American healthcare system, as the number of adults aged 65 and older will double to nearly 90 million people by 2050. Amid an already stretched infrastructure, plagued by rising costs and a shortage of skilled workers, the Baby Boomer generation—the largest in history—ages into the most demanding segment of healthcare consumers.

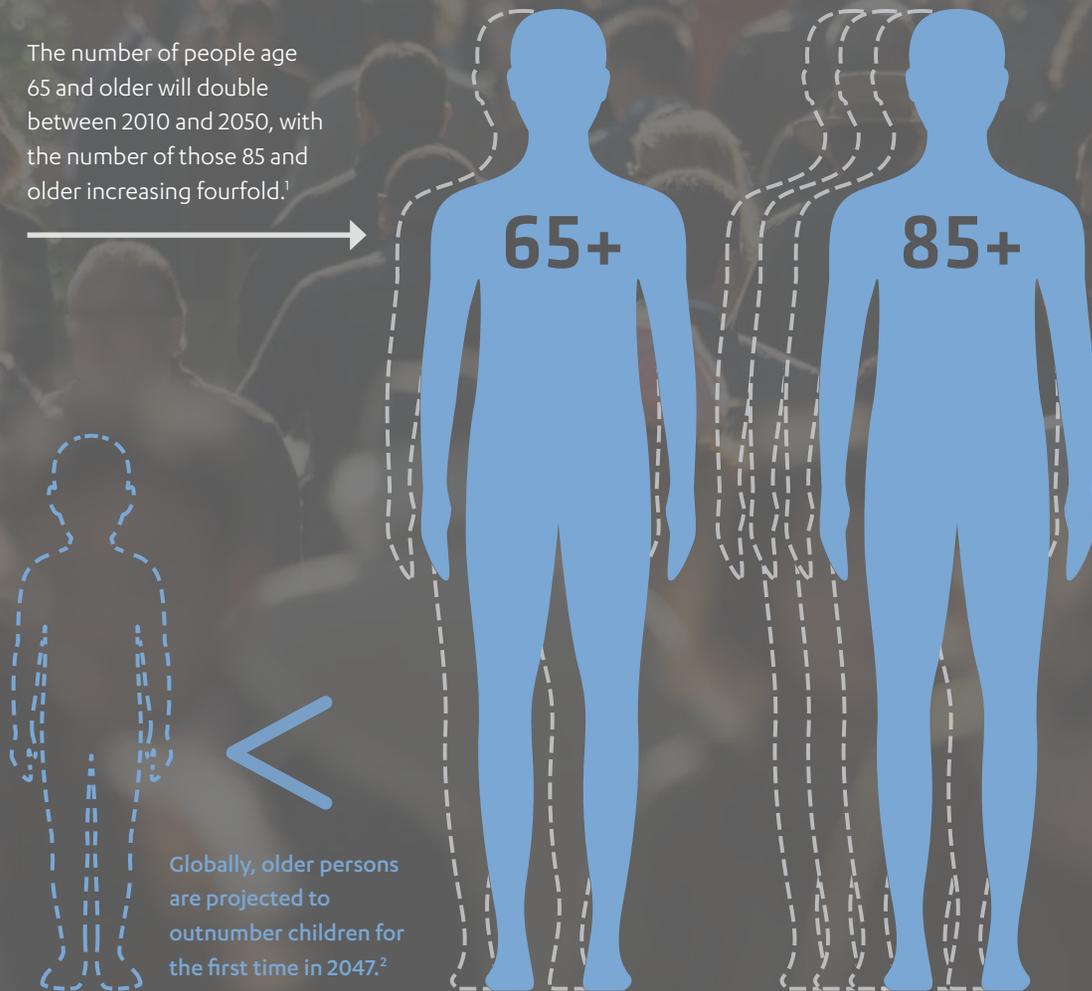
The healthcare system is scrambling to develop products and services to meet the physical needs of tomorrow’s aging population. Meanwhile, the emotional needs of this youthful, tech-savvy, and fiercely independent generation are not fully understood. There is a gaping market need for efficient solutions that engage older users in the latter leg of their health journeys.

We believe that design and innovation can help the healthcare system weather the “silver tsunami,” and transform aging into an enjoyable, meaningful experience for older Americans.

State of the Industry

The Biggest Generation

The number of people age 65 and older will double between 2010 and 2050, with the number of those 85 and older increasing fourfold.¹



Globally, older persons are projected to outnumber children for the first time in 2047.²

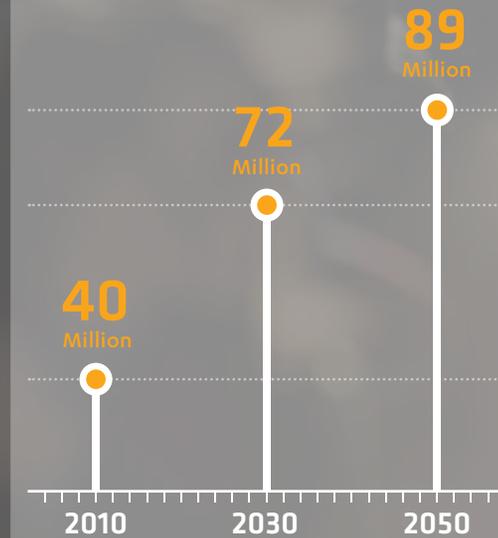
20%

Percentage of the U.S. population that will be Medicare-eligible in 2029.³

57% ↓

Drop in percentage of people ages 18 to 65 who are in a position to pay into Medicare.³

Number of People 65+ in the USA⁴



The Sickest Generation



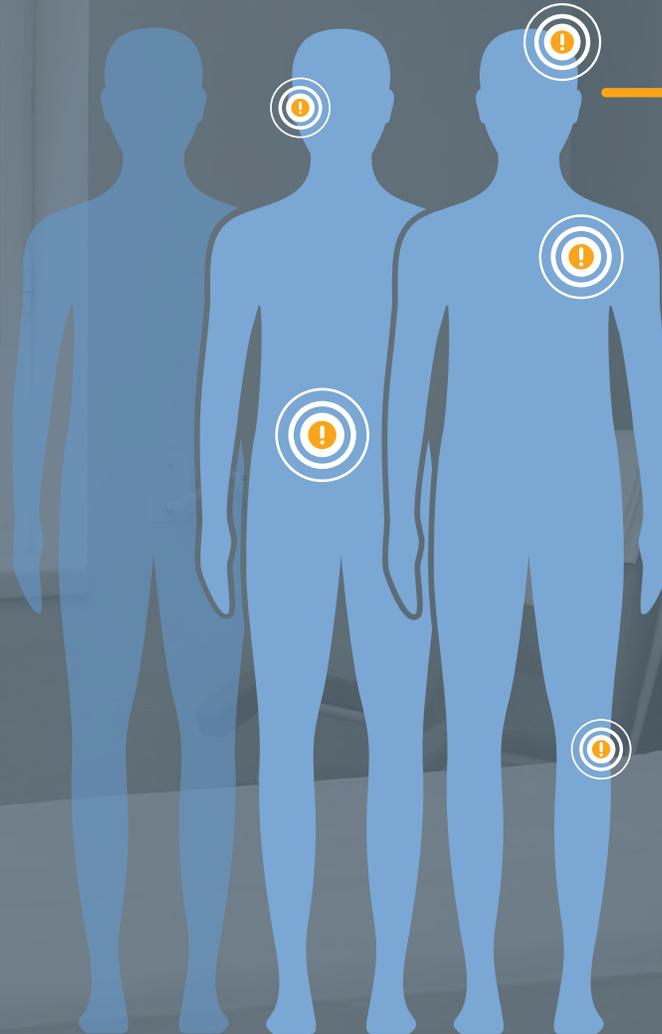
Two out of every three older Americans have multiple chronic conditions.⁵



93¢ of every dollar of Medicare expenditure goes to treating people with multiple chronic conditions.⁶



The cost of providing health-care for one person aged 65 or older is three to five times higher than the cost for someone younger than 65.⁸

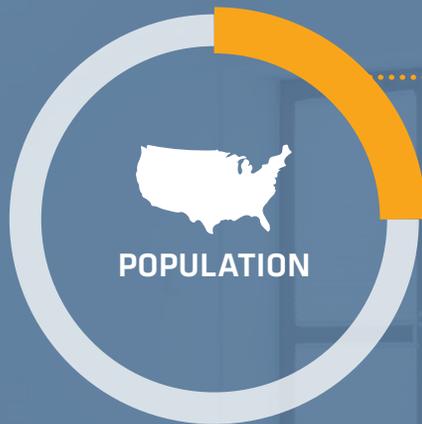


Chronic conditions were the leading causes of death among U.S. adults aged 65 or older in 2007–2009.⁷

Leading Causes of Death

1. Heart Disease
2. Cancer
3. Chronic Lower Respiratory Disease
4. Stroke
5. Alzheimer's
6. Diabetes
7. Influenza/Pneumonia

The Wealthiest Generation



Boomers represent **25%** of the U.S. population⁹:

CONSUMPTION (Total Dollars Spent)⁹



40%



46- to 64-year-old group now spends more money on technology than any other demographic.¹¹

TOTAL WEALTH IN THE U.S.⁹



75%

\$2.4
TRILLION

The annual income of the 50+ population, which accounts for 42% of all after-tax income in the U.S.¹⁰

A Tech-Savvier Generation

Baby Boomers are the **web's largest constituency**, making up more than 30% of the United States' 200+ million internet users.¹⁴



Nine out of ten Boomers reportedly made an online purchase in 2013.¹⁵

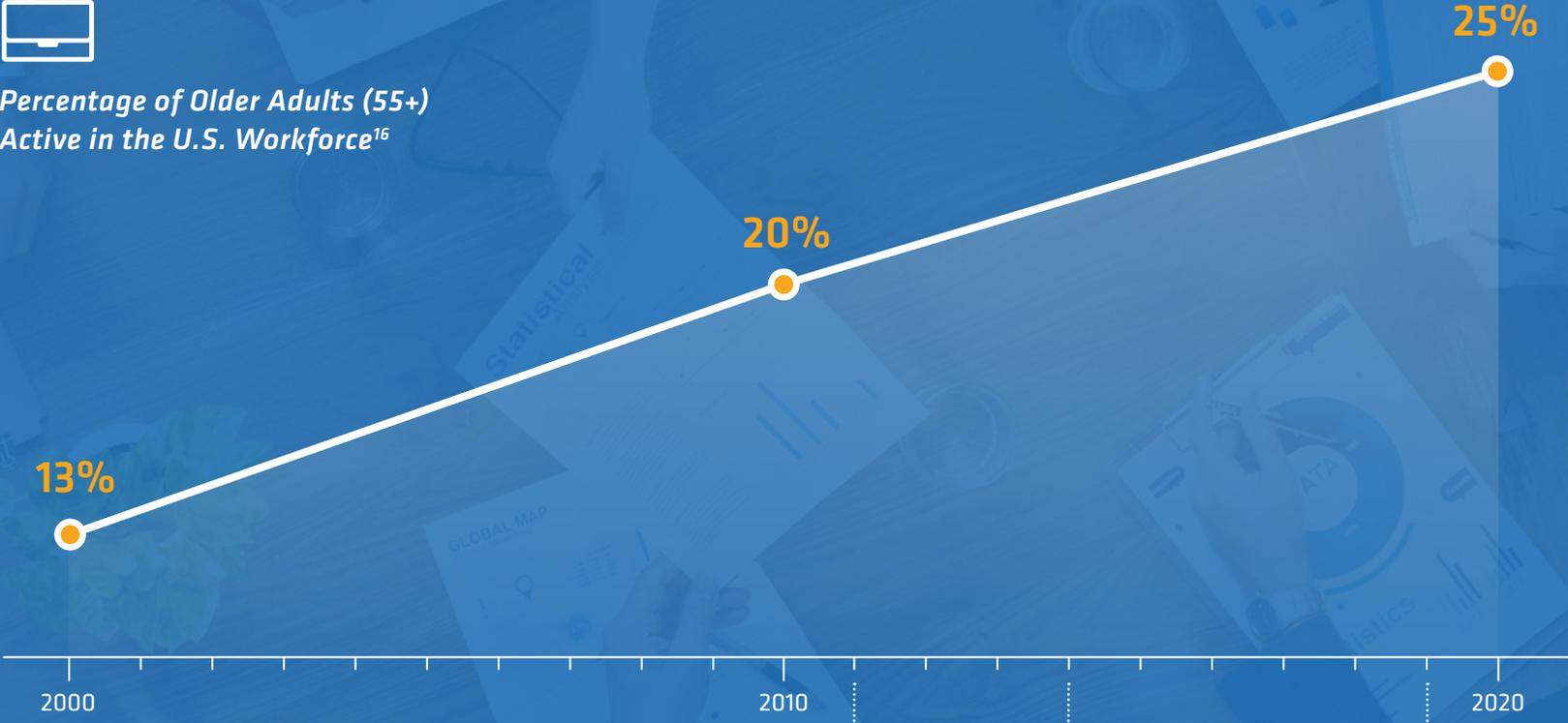


Boomers are almost as likely as Gen X and Gen Y to own computers and access the internet daily, and own mobile phones, DVRs, digital cameras, and GPS systems.¹³

The Most Active Generation



Percentage of Older Adults (55+) Active in the U.S. Workforce¹⁵



In **2011**, 30% of people aged 65-69 were employed.¹⁷

10% of workers 55 and older have started a new job in the past year.¹⁸

By **2019**, workers 55 and older will comprise 25% of the workforce.¹⁹

Challenges

⊗ For decades, aging was a predictable process. People put in their time and retired at age 65. Many of them downsized or moved to retirement communities. As their bodies started to break down, senior citizens went to doctors, hospitals, and assisted living facilities to treat the effects of aging. They were given poorly thought-out assistive products—walkers that required them to add tennis balls to the feet to achieve the right balance of motion and stability, or large, cumbersome buttons to wear around their necks in case of emergency—that stigmatized them in the best case scenario and failed them in the worst case. They accepted this, because they had no choice.

We're undergoing a period of rapid change now, in society and in the healthcare system. Yesterday's solutions cannot meet the needs of tomorrow's population.

Aging is Hard.

Few people would describe aging as a positive experience. It's fraught with physical, cognitive, emotional, and social challenges.

As people age, they face hurtful stereotypes—they are seen as weak, slow, forgetful, stubborn, stuck in their ways, and unable to do basic tasks like drive and shop for groceries. Stereotypes about older people are exaggerated and applied with offensive sloppiness, but they are founded in an unfortunate truth—both the body and mind break down with age.

Even “**successful aging**” produces physical side effects, such as diminished vision and hearing. A 2011 AARP study found that up to 67% of people 50 and older experience some hearing loss.²⁰ Additionally, bones, muscles and joints become weaker. The hands, in particular, experience a reduction in nerve endings, making it difficult to sense pressure, temperature, or pain as precisely. This makes it hard for a person to continue doing the same activities he or she has enjoyed during earlier life.

The older someone gets, the more likely they are to experience dementia or Alzheimer's. But even the healthy aging brain experiences cognitive challenges. A lifetime's worth of wear and tear

on the brain produces **oxidative stress**, leading to changes in thinking and memory. Most notably, the brain becomes slower to process information, making it more difficult to retain information and learn new things.

A person ages much faster on the outside than on the inside. An emotional dissonance results when the physical self can no longer keep up with the perceived self. The loss that people experience as they age—loss of function, loss of self, as well as loss of status and relevance—is partially responsible for depression among older adults. The National Center for Biotechnology Information reports that clinically significant depressive symptoms are present in approximately 15% of older adults, and up to 42% for residents of long term care facilities.²¹

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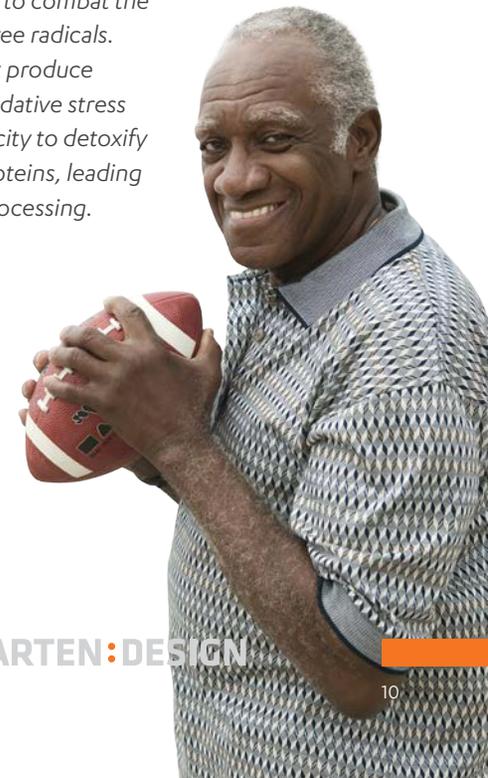
Successful Aging

A term coined by John W. Rowe, MD, and Robert L. Kahn, PhD, in 1997 in the Journals of Gerontology. Successful aging, according to this model, describes people who remain free of disease, can function at a high physical and cognitive level, are socially engaged, and are productive. According to research, only

3.3% of older adults met Rowe and Kahn's definition in the strictest sense. However, in two recent studies, the vast majority of older people rated themselves as aging successfully, even when they did not meet all criteria for successful aging. The studies found that optimism, effective coping styles, and social and community involvement are more important to aging successfully than being disease-free.

Oxidative Stress

A state of imbalance between the production of harmful free radicals and beneficial antioxidants. Antioxidants are needed to combat the destabilizing effects of free radicals. When the body does not produce enough antioxidants, oxidative stress reduces the brain's capacity to detoxify harmful molecules or proteins, leading to slower information processing.



Boomers are Challenging Assumptions. Again.

Today's seniors are redefining aging. The **Baby Boomers**—notorious in their youth for rebelling against the roles and traditions expected of them—are making no exception for aging. As older Americans now in their 50s and 60s, Boomers have different defining life experiences from previous generations that have shaped their attitudes toward the aging process. Not content to sit back in a rocking chair and fade into obscurity, Boomers are fighting back against aging. They are working longer and staying more physically active than any previous generation. They continue through every phase of life to place an emphasis on fashion, performance, and fitness.

Furthermore, older Americans today eschew the terms commonly applied to their elders. "Senior citizens" and "the elderly" have

fallen out of favor due to their implications of frailty, nursing homes, and lack of goals and passion. The active Boomer cohort can't relate! They aspire to maintain their independence, aging in place as they continue to pursue the careers, relationships, hobbies, and causes that give their life meaning.

As a "sandwich generation," many Boomers have cared for an aging parent and developed strong opinions and preferences that will affect their decisions as they themselves age. They are more discerning and demanding than previous generations when it comes to consuming products and experiences for aging.

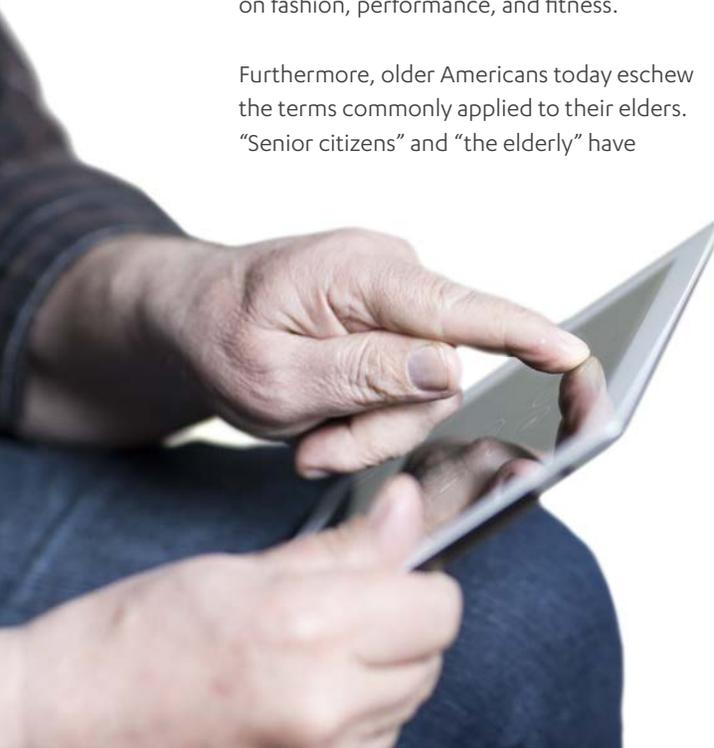
The most notable divide from their elders is Boomers' comfort with technology. Until recently, solution providers have viewed seniors as tech-resistant luddites. This is no longer true for people whose careers may have begun in the age of the typewriter, but are now culminating in the age of the iPhone. Boomers have worked with and embraced computers, the internet, e-commerce, and social media as part of their lives. They view technology as a productivity tool—a solution, not a problem. This trend will only solidify in the next 50 years as Digital Natives age into the senior cohort.

These generational differences will challenge assumptions, require new research, and force solution providers to re-evaluate their approach to aging. But it also opens up many opportunities for products and technologies to enhance the aging experience.

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Baby Boomers

A generation of people born between 1946 and 1964. Advertisers coined the term "Baby Boom" in 1974 to recognize the spending power and different demands of these (then) young people. In 2014 there were a projected 75.4 million Boomers in the United States. Demographers subdivide this large generation, spanning nearly 20 years, into two groups with very different life experiences. Leading-edge Boomers, born through the mid 1950s, came of age in the era of John F. Kennedy and Martin Luther King, the Civil Rights movements, and the Vietnam War. They enjoyed good economic opportunities and were largely optimistic in their outlook. Later Boomers, also called Generation Jones, came of age in the era of Watergate, the 1979 oil embargo, and the emergence of AIDS. Their outlook tends to be more pragmatic and skeptical.



The Healthcare System Can't Handle It.

Modern medicine has done wonders at prolonging our lives. Advances in biomedicine and public health are responsible for preventing deaths and doubling people's lifespan over the past 150 years.²² But, they have not necessarily improved people's **healthspan**. Today's seniors, and those of the near future, have more chronic conditions like heart disease, diabetes, and joint disease.

The medical system is not optimized to meet the needs of people fighting multiple chronic conditions. Healthcare today is fragmented. A person likely sees different doctors for heart problems, joint problems, and cognitive problems, and those doctors have little communication or coordination. The patient and his or her caregivers are left to put the disjointed pieces of information and treatment together into a complete picture. People with

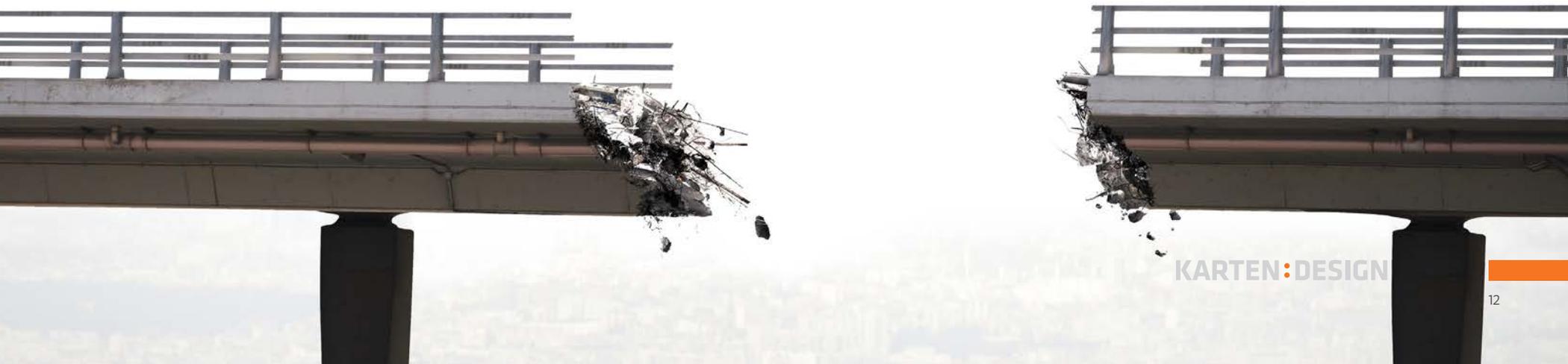
multiple chronic conditions are at greater risk of conflicting medical advice, adverse drug effects, unnecessary and duplicative tests, and avoidable hospitalizations.

Older Americans are not just growing in numbers; they're also growing as a percentage of the population. Within the next 15 years, approximately 20% of the U.S. population will be Medicare-eligible.²³ Older Americans are outpacing the number of doctors, nurses, and other skilled caregivers available to administer to their health demands. For example, there are less than 9,000 geriatricians in the country, but an estimated 36,000 will be needed by 2030.²⁴ The economics of supply and demand call for new solutions. With fewer resources, health professionals will need to care for more people, and older adults will need to take a more active role in their own care.

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Healthspan

A person's healthy life expectancy. Brian Kennedy Ph.D., President and CEO of the Buck Institute for Research on Aging, used this term in his 2013 TEDx Maui talk, advocating the slowing of aging. For people born between 1990 and 2010 globally, life expectancy has gone up 4.2 years for men and 1.9 for women, but healthspan has not risen in proportion. It gained only 2.7 and 1.1 years respectively for men and women.²⁵ This creates a longer period where people are living in poor health.



Aging is Not So Simple.

Many solution providers look at aging as a destination, rather than a journey. Someone becomes a “senior” at age 65, and the story ends there. Many times, age categories on surveys max out at 60 or 65, foisting people with a 30-plus-year age gap into the same “grey zone” that obscures their vast differences. Often times, older adults’ experiences are excluded from research agendas all together. This is even true in medicine! The median time a medical student devoted to geriatric education in 2005 was only 9.5 hours.²⁶ Additionally, older adults are under-recruited for clinical trials. Older adults are essentially shoved under a rug, out of sight and out of mind—by society and many solution providers. Their special needs, as they differ from the younger population, and even from each other, are not well-known or well served.

As lifespans are prolonged, the “mature adult group” is becoming increasingly diverse. The fastest growing segment of the population today is people 85 and older.²⁷ One may easily live 20 or 30 years as an “old” person! Yet, we use one term to describe a group with many different needs, abilities, personalities, ceremonies and habits. Solution providers thinking simplistically about aging will be challenged to create a product or experience that serves the needs of any.



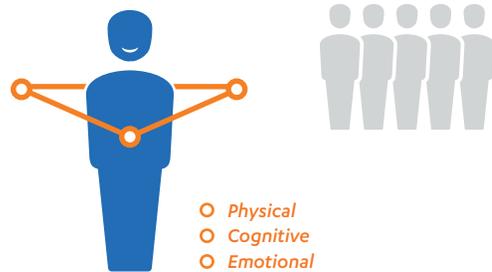
Solutions

Create Emotional Connections

Aging as we know it today produces many negative experiences, from the frustrating loss of physical and cognitive function to the isolating loss of status and purpose. Many solutions for older adults focus on this sense of loss. They are a reaction to diminished health or ability. They are designed with pure function in mind, ignoring a user's emotional experience. Tuning in to emotion and designing solutions that make older people feel better about themselves and their experiences is an untapped opportunity.

Medicine can't yet fully restore the bodily function that aging has taken away from people, but we can design products and experiences that allow older adults to keep their independence, dignity, sense of self, and purpose as they age. We can design solutions that give them confidence, celebrate their achievements in life, and help them address limited care resources. We can design solutions that transform aging into a positive experience.

Enable Independence



Today's older Americans have a self-reliant mindset. They don't want to be a burden to their loved ones, and they don't want to admit weakness. Loss of independence is one of people's biggest fears about aging. However, products and solutions designed without attention to aging users' special needs hasten the process of dependence. Whether they're confronting a medication dosage that they can't see well enough to measure or an app that requires too much input on a small glass screen from their aching fingers, a person's declining

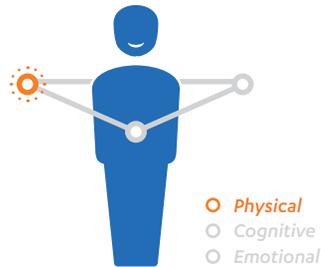
physical abilities often forces them to slow down, or even ask for help with routine tasks. This reinforces harmful stereotypes, erodes older adults' self-confidence, and ultimately affects their adherence to self-care regimens, as some people choose to give up rather than confront the feelings of frailty and dependence.

Independence is not only desirable; it is a necessity as the mature demographic's growth outpaces the traditional resources available to serve them. This will require more

care outside of hospitals and medical and assisted living facilities, and put more products directly into the hands of older users.

Older adults should be able to go about their life experiences independently. Solutions designed to meet their needs will create a better experience, and, as a result, will see higher adoption and compliance. Solution providers should look at usability broadly, considering **physical, cognitive, and emotional** needs.

Enable Independence



“I’d like to throttle whoever came up with the idea of dark gray on light gray (or vice versa) labels on electronic devices. That fad started a long time ago, so I hope its instigators are now wearing bifocals, losing night vision, gaining cataracts (as yet too minor for insurance to pay to remove), feeling arthritic twinges in their knees as they do obeisance before a floor-level device, and wondering where the heck they put the flashlight they need to see which button does what.” – ML Chadwick of Maine, via NYT

Physical

Easy to See

More than 5 million American adults have vision loss so significant that they have trouble seeing even when wearing glasses or contact lenses.²⁸ Millions more switch between multiple pairs of glasses for different viewing situations. Ease the burden on their eyes by using contrast to highlight key interaction areas or information, whether physical or digital. This can be achieved through shapes, materials, colors, and textures.

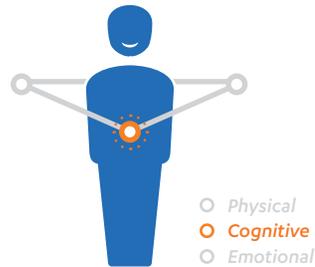
Easy to Handle

Solutions should cater to the needs of aging hands, which can be subject to arthritis, tremors, diminished strength, and limited tactility. If a product employs physical controls, use obvious protrusion and distinctive edges that are easy for older hands with diminished touch sensitivity to find. Consider the amount of force required to operate a product and think about positioning areas where force is required to give users stability and balance. Interactions at a small scale, where aging hands must perform tasks with precision, are problematic. Gesture control and voice control are emerging interfaces with potential to relieve the burden on users’ hands.

Consider Context

A solution may adhere to all of the best practices, but if it doesn’t work in the context of a person’s life, it is not very usable. Consider factors such as, where will a person interact with your product? Something used in the bedroom or bathroom will have different needs than something used in public spaces. Think about everything that could go wrong beyond the user’s control—dim lights, glare, loud competing noises, or interference from pets or grandchildren. What happens if someone drops it? A good solution works under even the most extreme conditions.

Enable Independence



Cognitive

✓ Be Simple

Life is too short to spend reading a users' guide. The aging brain may be challenged to retain new information, which makes it harder to memorize a long list of steps or interpret large volumes of information. If your solution provides information, make it meaningful in a single glance. Use straightforward language and focus on specific actions that users can take to improve their health or ability. The best products are intuitive and need no instructions. Colors, lines, and form indicate the purpose of a device and its controls. When it comes to features, "more" doesn't always equal "better." Developers should conduct research and testing to determine what functions hold the most value to target users, and which are just distractions.

"We've lost some of our eyesight; we've lost some of our manual dexterity; but mostly we've lost the patience to deal with stuff that doesn't work right." – Gary Kaye, founder of Tech50+

🕒 Tie in with Existing Habits and Skills

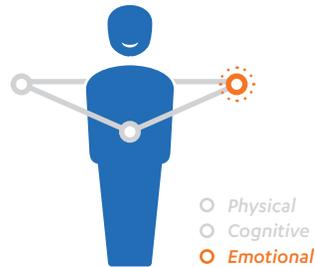
Don't expect people to change their behavior for your product. Get to know your target users and the habits and interactions they're most comfortable with. Create solutions that leverage familiar interactions that users have incorporated into their unconscious muscle memory. Generational differences are key. The "young old" who have successfully immigrated to the digital world of taps, swipes, and digital reading will have different habits than those more comfortable with tactile elements like paper and manual buttons.

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Digital Immigrant

A person who was born before the widespread adoption of digital technology. There is a belief that early exposure to technology fundamentally changes the way people learn. "Digital" is a second language for those born before computers and cell phones entered every home. Many have learned the language and speak it fluently, but Digital Immigrants speak with an Analog accent, detected in behaviors that cling to old world experiences, like printing documents to read and edit. Marc Prensky first introduced this term in his paper, "Digital Natives and Digital Immigrants." Though the paper was written for educators, Prensky's observations are relevant to designers, whose products must appeal to both Digital Immigrants, including Baby Boomers, as well as Digital Natives who were born in a world where technology was standard.

Enable Independence



Emotional



Enable Control, Not Just Care

For many people, independence means **aging in place**. The market has responded with solutions that give older users a safety net at home by alerting a caregiver to accidents, emergencies, and threats. While this can be valuable, the feeling of needing care can feel like an imposition on someone's independence. Solution providers should look for ways to give older users autonomy and control, not just a safety net. Services like online grocery shopping and delivery company Peapod and ride-sharing giant Uber help people live life as normal despite limited mobility. Take a cue from emerging services and consider how your solution can enable mature users to do more.



Respect Privacy

Many aging in place solutions feel like an invasion of privacy. Independent-minded adults don't want to be constantly reminded that someone is monitoring their every move. New smart technologies—from an urban radar that allows people to study how the reflected waves differ to determine if a person is simply sitting in a chair, tripping or collapsing from a heart attack, to advanced image sensors that extract only data about body language rather than images—will enable solutions that feel less like a violation of privacy. As it develops, big data has the potential to provide information while preserving privacy. These advancements will help solutions become more seamless—there when needed, and invisible when not. Invisible products require little acknowledgement or interaction from their users. Without constant reminders of their presence, invisible solutions have the benefit of perceived privacy.

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Aging in Place

The ability to live in one's own home and community safely, independently, and comfortably, regardless of age, income, or ability level. Aging in Place is the concept and practice of allowing the elderly to live in their own homes and reduce the amount of time spent in hospitals, nursing homes, or spent with an in-home nurse. Ninety percent of people over age 65 report that they would prefer to live out their lives in their current homes, where their emotional attachments lie.²⁹

Provide Choice



We're living in an age of informed health consumers. Older adults in particular are some of the best informed. Pew's American Life Project revealed that 82% of online

Boomers and seniors use the Internet to research health and wellness information.³⁰ And there's more information than ever at their disposal, from targeted medical resources like WebMD to social media sites like Instagram, where people share their menus and exercise routines. For this group, maintaining the ability to navigate their own health journeys will provide a greater sense of meaning, control, and dignity.

Provide Options for Engagement

As users begin to engage with new products, let them choose how to build that relationship. Solution providers innovating beneficial new features for their products and apps assume that users want to dig right in. It's tempting to bring all features into the forefront and tell users how to interact with an interface. But this creates the danger of overwhelming people and making them feel out of control. Different features and functions will take on different levels of importance and meaning in different users' lives. Let users

decide when and what they would like to use. Today's complex, feature-rich interfaces can benefit from a strategy called **progressive disclosure**. It starts simply, with a single feature or task, and reveals new information gradually as it becomes meaningful to the user. Employ smart technology to curate an individualized experience, based on users' behaviors.



Let Users Exercise Authority

Today's tech-savvy older adults are already in the habit of doing research and making decisions. Technology can take this habit to the next level, enabling convenient support and tracking. Information technology can help fill the care gaps created by doctor shortages, and benefit people managing multiple conditions. For example, GrandCare Systems communicates with wireless ambient sensors that track daily activity and monitor vital signs such as glucose, oxygen, blood pressure, and weight, giving older people and their care teams a holistic health picture.³¹

Providing more information in users' daily lives can influence the everyday behaviors that have the most powerful impact on health outcomes. But this information should be presented in a way that puts users in control. Leverage their

love of learning by giving them context, not prescriptions. They don't just want to know what to do, but why. Put information at their fingertips and look for creative ways to help them interpret and apply it in healthy decisions. Helping users see connections between their behaviors and resulting outcomes will encourage them to take ownership of their health.

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Progressive Disclosure

An interaction design technique that maintains a user's focus by breaking complex, feature-rich interactions down into simple steps. It employs restraint, giving the user only information that is relevant to the immediate task at hand. New information is gradually revealed—building one piece at a time—as it becomes meaningful in the context of the user's goals and tasks. The intent is to prevent the user from feeling overwhelmed or distracted by too much information. Progressive disclosure minimizes cognitive workload, improves focus, and increases engagement.

Respect Identity



The body changes with age, but the soul remains the same. Just because someone moves on to a different life phase doesn't mean they have different emotional needs. Mature adults have the same aspirations as any other age group—to build relationships, contribute their skills, and care for themselves in comfort and style.

Aging throws a shocking plot twist into the later chapters of many people's life stories. They have gone through their lives identifying themselves in one way and now, due to changing physical or cognitive abilities, must think of themselves in another way. The solutions available to accommodate or combat these changes emphasize the plot twist. Many are designed for someone the user cannot identify with—someone who is old. Mature adults need products that don't detract from their sense of self. Thoughtful design, which considers aesthetics, context, dignity, accessibility, and utility, will help older adults feel connected with their identity as they age.



Indulge Vanity

Just because someone becomes physically disabled as they age doesn't mean they become aesthetically handicapped. In fact, people exert extra effort to maintain their appearances as they age. A 2015 study revealed that Baby Boomers and older "Matures" plan to spend over \$4 billion dollars this year on anti-aging products and treatments.³²

Many assistive products contradict these efforts. Solution providers who apply strict usability guidelines without imagination create products that condescend to their users and stick out like a sore thumb, labeling them as

frail, old, and in need of assistance. These products are embarrassing and carry a stigma that can actually discourage people from seeking treatment. Untreated health issues have far-reaching implications as people often reduce or avoid their physical and social activity—putting them at risk for even further physical and mental health problems.

Rather than being used as an excuse for undesirable products, usability constraints should inspire creativity. Look for ways to apply color, form, texture, and materials to make products for older adults both usable and stylish.

“For a vain female like myself, it’s very hard to age in this culture. Inside I feel good—I feel charming, seductive, sexy. Nobody else sees that! I’m invisible. I want to be the center of attention. I hate being invisible.” – Isabelle Allende, TED Talk

Respect Identity



Avoid Labels

Names are very powerful. They frame people’s perception of a solution, and of themselves. Avoid labels that make someone feel disabled or talked down to. For example, it’s important to give users the ability to adjust and control the display of information on mobile devices, and other smart electronics. But larger, easier to read graphics do not need to be labeled as “Accessibility.” Perhaps a non-judgmental term like “Viewing Preferences” is more appropriate. Many older adults resent products designed specifically for seniors with pared down features and obvious accessibility features. Respect users’ intelligence and pride as well as their physical and cognitive needs.

Reframe Health as a Journey

Today’s assistive products for older people are reactionary. People must buy them in response to, or in fear of, negative physical changes. Traditionally, insurance has not covered these products, leaving users to pay

out of pocket for something they don’t want. Product developers have employed bare bones strategies to keep costs down, resulting in ugly, flimsy products that are not well thought out. Everything about this model is changing. Payers now recognize the value of prevention and keeping people out of the hospital. They are willing to invest in preserving their health. Today’s 50-and-over population has more wealth than previous generations, and is more willing to invest their money in quality products. These factors are converging in a demand for products that reach people before their health starts to deteriorate, and accompany them through multiple phases of their **health journeys**.

Solution providers who can provide value in people’s lives while they are healthy will find greater acceptance in users’ lives when their health deteriorates. As the “Internet of Things” becomes a reality, smart, connected products will become an investment in wellbeing, not a

reaction to sickness. In the future, smart homes will provide assistive services early in someone’s health journey, providing practical value before a health problem arises. Look for ways to integrate smart technology into objects that people already own and use, rather than to force change in response to sickness or disability.

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Health Journey

A framework that views aging not as a state of being, but as a progression. A health journey looks at someone’s health as an elongated experience over their lifetime, through many life stages and milestones. It looks at how someone maintains their health and treats illnesses/injuries, and how they engage with fitness and health. Health journeys also consider how someone’s attitudes change over the course of life, based on biological, psychological, and societal influences.

Provide Purpose



“The two most dangerous years in your life are the year you’re born because of infant mortality, and the year you retire.”

– Dan Buettner, Author of *Blue Zones*

Many people face diminished physical ability at a time when they’re also questioning their own meaning. They may be retiring and giving up the work that has defined them. They’re becoming empty nesters for the first time in many years and can’t be defined in terms of the care they offer. Suddenly, no one *needs* them. Yet research has shown that a sense of usefulness prolongs physical and mental health. National Geographic writer and explorer Dan Buettner, who studies the world’s longest-lived peoples, claims that people who know their sense of purpose and activate it in their life enjoy about seven extra years of healthy life expectancy.³³ This thinking resonates with today’s older adults, who are in no hurry to slow down.

The solutions that gain the most traction and adoption from older patients will offer value not just to doctors and caregivers, but also to their primary users. They will tie in with the things that are important to older users and help them achieve their goals, whether they involve talking to grandkids or maximizing their career performance.

● ● ● Help Them Stay Productive

● ● ● In the past decade, there has been a 67% jump in people working past 65, according to Bloomberg.³⁴ The Sloan Center on Aging & Work at Boston College predicts that workers 55 and older will comprise 25% of the workforce by 2019.³⁵ With more people working longer, it’s important that people can succeed and contribute in the workplace regardless of age. Typically this conversation revolves around physical accessibility. For example, BMW recently introduced ergonomic changes to its assembly line, including wooden floors, orthopedic shoes, and magnifying glasses, to help older workers maintain productivity. Less talked about are solutions that help older workers feel more confident. Workers themselves will be likely to invest in products that help them feel confident, from hearing aids to exercise and skills training programs.

Provide Purpose



Help Them Stay Connected

43% of older adults experience social isolation, putting them at greater risk for depression and mental and physical decline.³⁶ Solutions that offer companionship and create communities will enrich users' lives as well as their health. Many inspirational examples exist to inspire companies that want to combat loneliness.

- » The Intergenerational Learning Center at Providence Mount St. Vincent Retirement Center pairs its 400 elderly residents with preschoolers who study on site to enjoy music, dance, games, and crafts.³⁷ Many other institutions follow a similar model.
- » NPR reports³⁸ on the rise of nonprofit “villages” that, for a small fee, organize a network of volunteers to offer the help

“If a person such as myself dies, we leave behind a box of hard disks and an online account of images stored in the cloud. I refer to it as my “nightmare scenario.” My closets are being cleaned out. My kids/grandkids find a box of hard drives. What’s the most likely outcome? The garbage or another closet, attic or basement. Hard drives hold no emotional weight. There’s a good chance, in that situation, nobody will ever see, enjoy or discuss my pictures ever again.” – Joseph Campanella via Petapixel.com

that seniors need to age in their homes—everything from yard care to technology help, to having someone come over and improve balance by playing Nintendo Wii together. Fifty such villages exist today and 100 more are in the works.

- » Technology is becoming intelligent enough to provide a valuable supplement to human companionship. *Jibo*, for example, is a social robot designed for the home. It offers reminders and companionship, and connects users with the outside world through immersive video calling. Developers demonstrated strong demand by raising more than \$3.7 million from potential users of all generations on crowd-funding site Indiegogo.³⁹



Help Them Live Out Their Values

As family and career obligations wind down for many older adults, it opens new opportunities for them to work toward social causes. Businesses are innovating new experiences that build on socially conscious Boomers' desire to affect their community and environment. The New York Times recently chronicled how the generation notorious for living in communes in their youth is now stimulating demand for “green” retirement communities, where residents work in community gardens and beehives, and operate recycling programs and water saving initiatives.⁴⁰ Consider how your solution can give users purpose by connecting them to a community and helping them work toward a cause they value.

Provide Purpose



Help Them Pass on Their Legacy

Growing older is not all bad. Along with age come wisdom, life experience, and a focus on what matters. Health solutions that help people preserve their legacy create emotional connections and offer additional value. For example, *Independa*, a software company providing a platform to support aging in place, offers a Life Stories module—an application that automatically connects family members and caregivers with their loved one via the telephone, offers conversational prompts, and records and archives the conversation. Look for ways that your solution can help users strengthen emotional connections with their loved ones to pass on their legacy.



Help Them Connect to Memories

Memories become even more vital as mental faculties begin to fade. The documentary *Alive Inside*, by Filmmaker Michael Rossato-Bennett, follows the power of music to reawaken the souls of people suffering from severe dementia. The federal government, universities and health-care institutions are now researching whether the arts have a quantifiably therapeutic effect on people with Alzheimer’s disease or other age-related disabilities. While these studies are in their early phase, *The Washington Post* reports that evidence seems promising that the arts can improve cognitive function and memory, bolster a person’s mood and sense of well-being, and reduce stress, agitation and aggression.⁴¹

“One resident that barely opened her eyes—she didn’t respond—we knew her for two years, and once we put the iPod on her, she started shaking her feet and started moving her head. It was amazing.” – Alive Inside

Fail Forward Fast



It's hard for a designer in his 20s, 30s, or even 40s to anticipate every need of a mature user. Sometimes an empathetic attitude and a list of best practices isn't enough. Once you've developed a solution, it's important to test and refine it with your target users. Give them a voice early in your development process, and provide them with something concrete to see, hold, or navigate. This “**fail forward fast**” process will quickly point out usability pitfalls before they become integrated into your design, and give your team the insights they need to develop a desirable solution.

Some initial questions to consider:

- » Can people see it? Can they hold and lift it?
- » Is it easy to turn an object on and off, or to navigate an interface?
- » Can users accomplish their desired objectives?
- » Are users drawn to your solution? Is it something they would choose to use?
- » How would this product make users feel about themselves and their abilities?

LEXICON

Fail Forward Fast

The practice of managing risk by testing ideas early before investing huge sums of money or time to developing them into marketable products. Fail forward fast embraces frequent, iterative failure as a key part of the learning process. Product development companies have begun applying this practice by presenting rough prototypes to potential users and eliciting feedback early in the product development process; developers then refine concepts based on this input. Fail forward fast is most beneficial when practiced at multiple points during the product development process to evaluate and fine-tune the value and interest a solution provides to potential users, the ease with which they're able to use it, and the overall experience it creates.

Outsights in Action

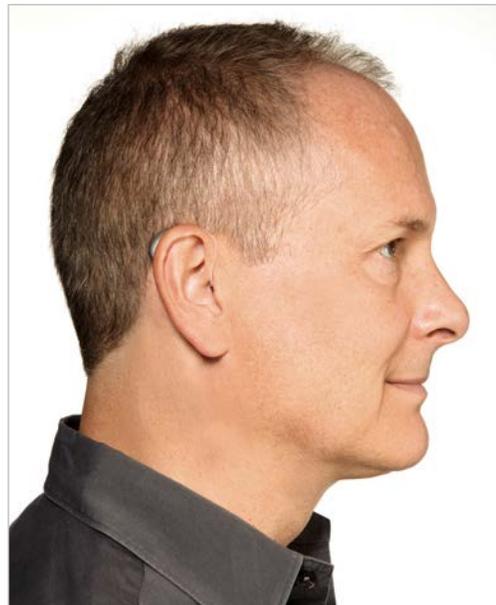
How Karten Design is applying our Outsights
to address pressing healthcare challenges

Starkey Hearing Aids

During an eight-year partnership, Karten Design has helped Starkey Hearing re-imagine its hearing aid product line around users' physical and emotional needs. Over the course of our extensive in-home research, we learned what hearing loss meant to people. We discovered that it makes people feel lonely and isolated as they stop participating in conversations that are too difficult hear. Though hearing aids



today are more functionally sophisticated than ever (they come close to restoring natural hearing), no one wants a hearing aid! The dreaded devices carry a heavy stigma associated with age, disability, and weakness. On average, people suffer through seven years of muddled voices and muted sounds before succumbing to a pair of hearing aids.



Throughout our partnership, Karten Design has chipped away at the stigma, making hearing aids a more desirable option. We designed small hearing aids that virtually disappear when put behind the ear, thanks to carefully crafted geometry, and special efforts to blend color and materials with a wide range of skin and hair. Functional innovations like large push-buttons, remote controls, and one-of-a-kind gesture-based technology help users operate their hearing aids without drawing attention to their ears. Most recently, we worked with Starkey on its first Made-for-iPhone hearing aid, targeting a younger, tech-savvy demographic of hearing impaired people, encouraging earlier treatment of hearing loss. The Halo is compatible with the iPhone, iPad, and iPod Touch, leveraging iOS functionality and a sleek design language to meet the needs of today's digitally literate consumer. It syncs with the TruLink Hearing Control app to stream phone calls, music, movies, and even Siri directly to a wearer's hearing aids. Patients can easily fine-tune volume and tone settings from their iPhone based on their current real-time environment, giving them more control over their hearing experience than ever before.

Endotronix Care Management Solution



Chronic heart failure is the most common reason for hospitalization in adults over the age of 65.⁴² Endotronix has developed a solution to help people proactively manage and treat heart failure from home. A tiny pressure sensor is implanted in a patient's pulmonary artery and pairs with a portable reader to monitor real-time pulmonary artery pressure—an indication of the heart's performance. The data is transmitted to a dedicated Clinical Care Team for review and analysis, enabling timely clinical interventions,

such as adjustments to medication, often without an office visit. However, no positive experience existed around this new care paradigm: heart failure patients had to take a daily reading via a machine that looks like an old-fashioned copier. Kartan Design designed a sleek, portable reader that encourages patients and caregivers to habitually collect and interact with information from the implanted sensor. It was important that the handheld piece fit in with the user's environment and



their ceremonies and habits inside the home. We subtly optimized it for aging hands, with accessible proportions and contoured, grip-able surfaces. Meanwhile, the user interface makes data simple and meaningful to patients and their caregivers without excessive features. The system now provides patients portability, accessibility, and convenience—empowering them to self-manage their condition from the comfort of home.

Industry In-Depth: Home Monitoring

A closer look at how health challenges are impacting today's influential industries

Home Monitoring



**\$2
BILLION**

Aging-in-place technology is currently a \$2 billion industry.⁴³

**\$30
BILLION**

The health and wellness monitoring market for Aging in Place is expected to reach \$30 billion in 2017.⁴⁴

Smart technology will transform homes in the near future. A dazzling array of home products—from thermostats to ovens to light bulbs—are using new technology to allow people to connect, control and monitor their home from afar. Though being able to turn your home’s lights on while pulling into the driveway is exciting, this technology has the potential to make an even more meaningful difference for the fastest growing segment of our population—seniors.

Seniors want to age in place, and new smart home monitoring technologies can help them do that. From small, “stickable” sensors that monitor medication intake to entire home systems that can identify a fall through motion detection and alert a caregiver for help, home monitoring products are enabling more older adults to age safely and independently in the comfort of their homes. Instead of forcing families to make the heart-wrenching decision to move an aging parent from his or her home to an assisted living

facility, these connected products are giving seniors the confidence to live alone, giving caregivers improved observation abilities, and giving family members peace of mind. As sensor technology, the Internet of Things, and ambient computing mature, home monitoring products hold even greater potential to send doctors and caretakers enough data and information to provide preventative care. This capability, coupled with a steadily increasing number of tech-savvy Baby Boomers able and willing to use such solutions, provides a huge opportunity space for solution providers. In fact, the health and wellness monitoring market for “Aging in Place” products is expected to reach \$30 billion by 2017.⁵¹ Home monitoring is an emerging market poised for great growth. But a few critical issues could stand in the way.

It seems so easy: buy the home monitoring system, set the sensors in place, and continue living your life. But, such systems still face emotional resistance from many end users. The idea of being watched and constantly cared for is unappealing. Some methods, like optical devices, can feel extremely intrusive. The home is often an individual’s private sanctuary, and allowing others continual access into this sanctuary threatens this privacy. And then there’s the data question: Is this collection of private data ethical? Who controls the data that is being ▶



90%

of people over 65 want to stay in their homes for as long as possible.⁴⁵

80%

of people over age 65 believe their current residence is where they will always live.⁴⁶

**\$20-25
BILLION**

The NAHB estimates the aging in place remodeling market to be \$20-\$25 billion—about 10% of the \$214 billion home improvement industry.⁴⁷



76%

of retirees are interested in technologies to monitor their health at home, such as sensors, alerts, or medication reminder apps.⁴⁸

67%

of retirees are interested in home technologies to help them optimize their health, such as devices for air purification or to improve their sleep.⁴⁹

64%

of retirees are interested in home technologies to connect them with their family and friends, such as video chat and interactive devices.⁵⁰

Home Monitoring



transmitted from these sensors? How can we make sure that this information is being delivered to its intended user, and not an outsider?

In order for home monitoring products to be accepted, they must be designed to fit in with their users' lifestyles. Forcing older adults to learn a new technology or inserting a foreign object into their home disrupts their established pattern of living—and draws attention to the fact that an “outsider” has access to information about their behaviors. It's also a constant reminder of their dependence.

For the home monitoring market to grow, solution providers must focus less on what a system can do, and more on how it makes its users feel. Aging in place is an emotional decision, representing someone's desire to

For the home monitoring market to grow, solution providers must focus less on what a system can do, and more on how it makes its users feel.

continue life as usual. The more a solution can maintain continuity with someone's healthy, independent life, the more accepted it will be. Look for ways to avoid feelings of dependence, disability, and interruption and elevate feelings of empowerment.

Addressing privacy is an important first step. Data should be collected anonymously whenever possible. Building in proper security measures to products early in the development process will keep users feeling safe and prevent against major privacy concerns down the road.

Products should also feel physically and emotionally “invisible” to their users. Automated solutions should disappear into the fabric of users' daily lives, and allow someone to live without thinking twice about using them. Creating products that blend into the background of users' daily lives requires product developers to understand the Baby Boomer generation. Study their routines and habits to learn which behaviors will be truly meaningful indicators to monitor, and empathize with their emotional barriers to change.

Expert Interview: Dr. Scott Kaiser

Outside perspectives from leading practitioners in the field

Dr. Scott Kaiser is a practicing geriatrician and Chief Innovation Officer at the Motion Picture & Television Fund (MPTF), a nearly 100-year-old charitable organization created by some of Hollywood's earliest luminaries to provide services, support and assistance to the entertainment industry community. Dr. Kaiser is passionate about improving the health and wellbeing of older adults through engaging, community-based initiatives.

We spoke with Dr. Kaiser about his work with MPTF, his experience working with the "oldest old," and his philosophy on how to make aging a more positive experience.



Dr. Scott Kaiser

Geriatrician and
Chief Innovation Officer,
Motion Picture & Television Fund

Tell us about the MPTF. What does your role as Chief Innovation Officer involve?

The most exciting part of my job is helping the organization develop and deploy a population health strategy. We're looking at how we can improve the health and wellbeing of members of the entertainment industry workforce and its retirees—helping them live and age well, with dignity and purpose. There are an estimated 150,000 active members of the Los Angeles-based film and television workforce and roughly 75,000 Baby Boomers in Hollywood who will retire over the next twenty years. Our mission is to look at this group—reaching beyond the health system and into the workplace, home, and community—and find ways to make them a healthy population.

What's unique about our approach is that we're most focused on impacting the non-clinical factors that profoundly influence health and wellbeing. Population health is thought to be affected by about 10% genetics, 10% clinical care, 10% physical environment, 30% health behaviors, and 40% social and economic factors (social factors include things like your level of education, social network and relationships, health literacy, and health confidence—how

confident you feel that you can manage or influence your own health). Do the math, and that's 80% of the health and wellbeing equation being influenced outside of the health system!

In my role, I'm focusing on that 80% of the population health equation, implementing a wide range of social services and community programs that meet people "where they are" and where health happens—at home and in our communities.

Tell us about the MPTF's Woodland Hills campus. How do people live differently there? What can other living communities learn from it?

Our residential campus in Woodland Hills is MPTF's "crown jewel." There, we have cottages for independent senior living, along with assisted living, long-term/skilled nursing care, a specialty care unit for people with dementia, and a geriatric psychiatry behavioral health unit. I'm continually in awe of this community and the care that I see there. It feels like an extended family. People in the industry refer to it as "the home"—no matter what your family is, or where you worked, you have this home. There's a sense that people know each

other and respect each other. This is something that makes MPTF really unique, but I think it's something that can also be recreated in other settings. When people move to a place where they have something in common—a shared purpose and some shared identity—it makes a difference.

Additionally, there are programs that make the place special. Channel 22 is our own in-house television station, for which residents produce their own original scripted and non-scripted content. It provides an opportunity for people to express themselves, explore their world, and maybe discover new passions. Creativity is an incredible elixir for overall wellbeing. Another example is our writing program, The Grey Quill Society. People get together once a week, write, share their work together, and get feedback. Again, you have people in there who have written their whole lives and careers, but also people who have never picked up a pen to express themselves. And of course, there's our Saban Center for Health and Wellness. It's like any gym, but with 90% socializing and 10% working out. We have a "gym buddy" program, where a volunteer helps a frail member who might not be able to make it to the pool or gym on their own, or who needs assistance in their workout. You see someone who lives in our dementia specialty care unit who has advanced cognitive impairments, who maybe can

hardly even speak, and you see them go three times a week with their gym buddy, smiling and thriving. You can't beat that!

Why study seniors? What do we stand to learn about their differences from younger people and from each other?

Older adults often aren't represented in scientific studies because they're thought to "muck up" the data and introduce a bunch of confounding factors. But the greatest consumers of healthcare are older people, so it's very important to look at their experiences! Why wouldn't you want to consider the destination as you design the roadmap for everyone else aspiring to live a long life? The fact is, we are living longer than ever, so we need to look carefully at the factors that will enable us to live longer and live better, and understand what the new old age will look like and how we will all experience it.

What's your biggest frustration with older adult care? If you had the power to change one thing, what would it be?

There are many ways in which our systems are ill-equipped to treat the oldest members of our society with the compassion, respect, and

care they deserve. From my perspective, one of my greatest frustrations is in the interface between health systems, community systems, and people's personal health experiences. I see frail older people absorbed into the healthcare labyrinth, chewed up and spit out—and sent out into the post-hospital care space (often a weak link in the continuum of care) with adverse transitions. Their care is too often not well coordinated and not truly centered around their resources, wants, and needs. There's a real opportunity for improvement here, and striving to improve the care of our eldest and most frail could make life better for all of us.

“Older adults often aren't represented in scientific studies because they're thought to “muck up” the data and introduce a bunch of confounding factors. But the greatest consumers of healthcare are older people, so it's very important to look at their experiences!”

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www.kartendesign.com



Contact Stuart Karten:
stuart@kartendesign.com
310-827-8722 x226

www.kartendesign.com
4204 Glencoe Avenue
Marina del Rey, CA 90292
PH 310 827 8722