Technology for Aging in Place

2019 Market Overview

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Laurie M. Orlov
Principal Analyst
Aging in Place Technology Watch

FORWARD

The more things change... This is the tenth anniversary of the launch of this Market Overview of technology for 'Aging in Place' – the category of offerings that help enable older adults to remain longer in their home of choice. The launch of that first report was timed in conjunction with the What's Next Boomer Business Summit of 2009 and offered a chance to speak publicly about a market category that had been largely ignored by tech industry analysts. As a long-time Forrester analyst, this seemed odd, not unlike the 'tree falling in the forest' cliché – if there is no market overview of tech categories, how do vendors position themselves in the market?

What a difference a decade makes. In 2009, there were specialized email services that converted an online message into paper form; WiFi in seniors' homes or senior living residences was rare; the mobile PERS offerings were just a concept; the iPad had not been announced; Digital Health was three years away; and Voice First offerings would not appear for another five years. AARP's Healthy@Home had just been published, noting the willingness to use technology in the home, even though little had been invented or marketed yet. In 2009, the market was forecast to be $20 billion by 2020.

All of that has changed by 2019. As the oldest Baby Boomer turns 73, at least half of adults age 65+ have broadband connections in their homes – and insurance incentives are pushing more tech-enabled health care offerings into the home. Meanwhile, seniors will face a worsening shortage of workers to provide care in the home – even as the majority of seniors will want to stay there versus move to senior living (which will face the same labor shortage). Expect tech adoption for the 75+ age range to ratchet up, along with lengthening age 65+ life expectancy.

Caregiving demands of an aging population drive policy change in 2019. In January, 2019, the coordinating body for Health IT (ONC) released interoperability advice, **connecting people to their care**, that requires representing the relationship between a patient and another person (provider, caregiver, or family member). And in February, ONC proposed a further rule change that would allow individuals to securely and easily access structured Electronic Health **Information** using smartphones and other mobile devices. And in March, 2019, the White House released a report on Emerging Technologies to Support an Aging Population.

From senior-only tech to senior-aware marketing. While there are still specialty tech offerings for older adults (i.e. PERS, now 30% mobile), more seniors are using general commercial offerings, from smart phones to smart speakers to smart watches with emergency buttons. Apps for caregiving have mostly come and gone. Tapping and typing, required in 2009, is augmented and sometimes replaced by speaking. And virtual reality has opened whole worlds, literally, for senior living residents. Sensors continue to shrink, doorbells have acquired brains, health-smart wearables are helping seniors better manage chronic conditions. The insurance and technology markets are united, so to speak, in the mission of helping older adults stay out of the dwindling number of hospitals, hoping that telehealh will make it so. Services are emerging, like BestBuy's Assured Living, to help families and older adults make the most sense of the ever-expanding tangle of tech in their home. For those who serve and sell to older adults, this report attempts to sort out what's now and what's next.

WHO SHOULD READ THIS REPORT?

This report was revised in March 2019, adding 33 new companies and updating products, services, websites, and apps. It serves as a market overview with a single purpose: it is intended to describe the need for, and the current market of, offerings to help aging adults live full lives in their homes of choice. As such, it is relevant to:

- Vendors and entrepreneurs marketing to baby boomers and seniors
- Social networking sites targeting baby boomers or seniors
- Advocacy and tech training groups
- Retirement Communities that serve independent adults
- Assisted Living Facilities (ALFs) and Communities represented by Leading Age and Argentum associations
- Senior housing developers
- Home care and home health agencies
- Home health care agencies
- Geriatricians
- Hospitals and integrated service delivery networks
- Government agencies and policy makers
- Geriatric care managers (Aging Life Care)
- Naturally Occurring Retirement Communities (NORCs)
- Startup incubators
- Venture capital and angel investors interested in the boomer/senior market
- Caregivers, seniors, and family members

"Once again, Laurie Orlov offers a construct to help the longevity market consider where it is going, who is in the market and what to watch in the future. This report is a must-read for those in senior care and housing, policy, health, wealth management and investing." – Mary Furlong, founder of the What's Next Boomer Business Summits

THE CONTEXT OF AGING – EVERYBODY'S DOING IT, MOSTLY AT HOME

Eighty percent of older adults today live in their own homes – with 34% of aged 65+ women and 20% of aged 65+ men living alone. Not surprisingly, the majority of them would like to or may be forced by finances to stay there – and if they move, according to Home Advisor research, it will be to another private home. Baby boomers began turning 73 in January 2019 – for those who live in cities, after age 80 they want to live in their own home or nearby. However, as the calculators of net worth by age indicates, unless a home is sold, there will not be enough money to pay for seniors' potential health costs when they are in their 80's or 90's.

Within that context, aging in place reflects the desire or ability to successfully age and remain in their home of choice, whether it is a private home, condo, apartment, or less likely, a group setting. This business opportunity is further underpinned by the very recent growth of interest in the mature market. During 2018 and into 2019, new product introductions were presented at multiple events, including the following: Digital Health Summit at CES 2019, Connected Health in Boston, Voice of Healthcare Summit, and pitch events run by AARP. Even if these startups do not succeed, they represent the sharpening focus on the caregiving and age-related space. Three factors are driving a wave of interest in caregiving, home care and aging in place:

Rising health costs and health policy drives care into the home. As Medicare penalties for hospital readmissions grow, hospitals are looking for ways to better control their destiny in the face of closings**.** They are providing outpatient clinics and buying rehab facilities (aka skilled nursing facilities, or SNFs). And they are focusing on managing hospital-to-home care transitions. Insurance companies seek ways to lower the cost of readmissions with improved care coordination and care transition programs. During 2018, providers saw more Medicare reimbursement for use of telehealth technology across multiple categories. And out-of-pocket healthcare spending is on the rise as people age, especially for medications and end-of-life care.

Stark consumer economic realities prevent moves to senior housing... Average net worth of the 75+ age range is now $264,800, inclusive of home equity (see **Figure 1**). This defers moves to assisted living, where move-in age is closer to mid-80's.With more than half of assisted living residents aged 85+**,** this has become a frailer demographic, needing help with multiple ADLs. But boomers are right behind them – and will be even less able to move in. They have simply not saved enough – holding an average retirement savings portfolio in their 70's of $186,800**.** That's not enough to live on after retirement and later afford more than a few years at a private assisted living community with an average nationwide monthly cost of $4000.

…And life expectancy at age 65 is still substantial, especially for women. For example, in 2014, the Society of Actuaries updated life expectancy to its highest projected number to date. This is used in pension fund calculations and asserts that women aged 65, on average, can expect to live until they are 88.6; men can expect to live on average to be 86.6. Worried about outliving their savings, for 25% of workers, 80 is the new 65. The combination of limited savings and longer life expectancy raises fears of outliving assets. Being unable to afford more than a few years of assisted living averaging $45,000/year may keep seniors at home longer**.**

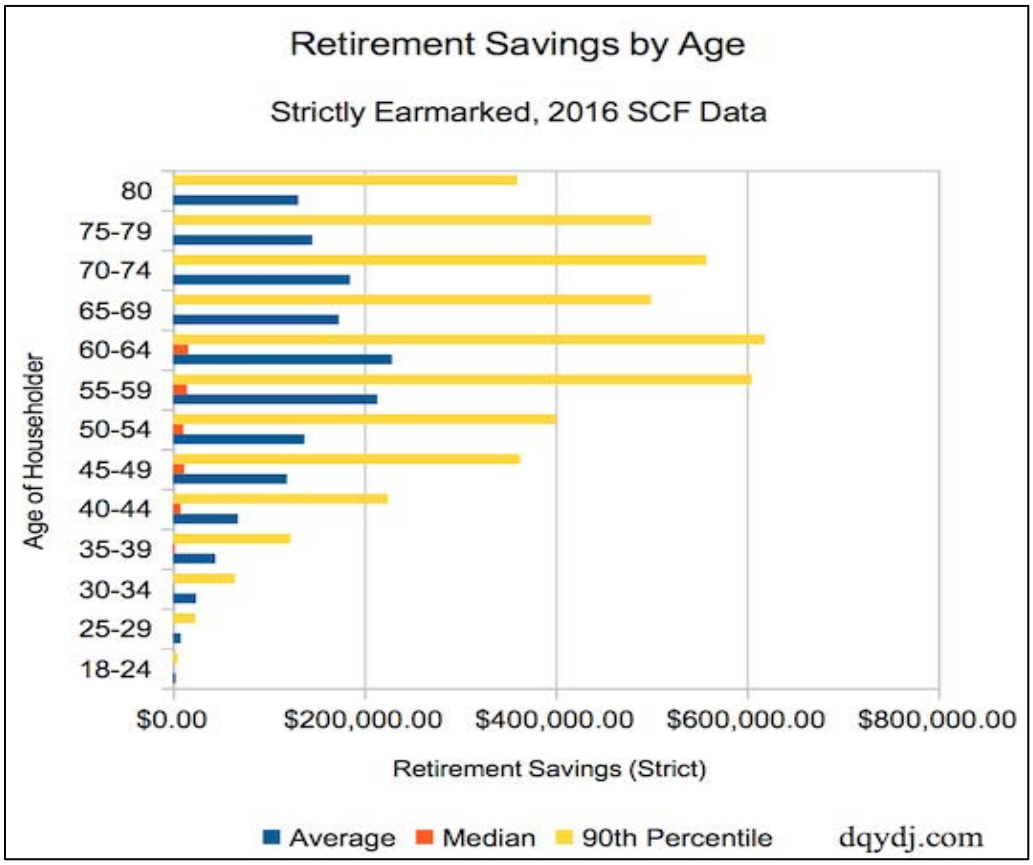


Figure 1 Retirement Savings by Age **Source: DQYDJ**

Investors and Policy Makers Care More about Caregiving and Technology

Caregiving demands of an aging population drive policy change in 2019. In January, 2019, the coordinating body for Health IT (ONC) released interoperability advice, connecting people to their care, that requires representing the relationship between a patient and another person (provider, caregiver, or family member). In February, ONC proposed a further rule change that would allow individuals to securely and easily access structured Electronic Health Information using applications for smartphones and other mobile devices. Furthermore, Medicare Advantage and Medicaid plans are more likely to reimburse for PERS and in-home technology.

"The commercial healthcare industry is paying more attention to the impact that technology can have reducing healthcare costs of older adults. After years of lack of proof, recent results are turning heads and causing action, including reimbursement." – David Inns, CEO, GreatCall

Tech adoption among the oldest has not kept pace with technology improvements. The surveyed ubiquity of technology has led to a belief that it is everywhere it needs to be, with media assumptions about the benefit of smartphones and online tools, ownership of devices, or access to broadband speeds. But while government and insurers see benefits of using technology to help people remain at home, device complexity, price, poor usability, rapid obsolescence combined with lack of standard professional training have created big barriers to broadening usage of an aging population, particularly for individuals aged 75+ (See **Figure 2 and Figure 3**)

Enablers/Barriers to Tech Adoption and Older Adults

Key Enablers for Tech Adoption	Key Barriers to Tech Adoption
ONC Interoperability – including family, caregivers of patient	Device ownership
Smartphone-wearables to track wellness, motivate activity	Perceived value and training among older users
Medicare Advantage changes to support device use	Management of devices, including forced obsolescence, upgrades and software versions
Discounts available for broadband	Price of home broadband
Voice First (Amazon speakers, Google FAssistant) broad deployment	Concerns about privacy with always listening devices

Figure 2 Tech Adoption – Enablers and Barriers in 2019

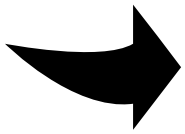
Device Adoption and concerns of older adults

Device	Age 65+	Age 75+	Source
Cellphone (not smartphone)	40% 24%	58-63%	Pew 2017 AARP 2019
Smartphone	46%	31%	Pew 2018
Fitness band	10%	N/A	AARP 2019
Tablet	40%	20-28%	AARP 2019 Pew 2018
Computer (Desktop, Laptop)	61%	73%	AARP 2019 Pew 2015
Use the Internet	66%	44-60%	Pew 2018
Home broadband	61-66%	28-41%	Pew 2018
Smart Speaker	11% 7.3%	N/A	AARP 2019 eMarketer 2018
Need help with setup/tech training	48%	N/A	Pew 2018
Not confident re: online privacy	48%	N/A	AARP 2019

Figure 3 – Device Adoption and concerns of older adults as of February 2019

Paid home care picks up where families and senior housing leave off. On average, home care fills a care gap of 20-27 hours per week at a presumed lower cost ($20.50/hour paid to agency) than a move to assisted living. Home care work (or personal care aide) has been one of the fastest growing job categories in the US, according to the Bureau of Labor Statistics, but pay to the worker averages around $11/hour for the worker. And for much of the industry, turnover of 45-66% is typical and the cost to replace is $2200. Further, wage increases are rare, but the shortage of home care workers worsens, especially in urban areas in which they cannot afford to live – and are predicted to amount to 7.8 million unfilled jobs by 2026.

Medicare Advantage changes may revive tech-enabled home care services. Besides further cementing consumer commitment to support aging at home, 2018 demonstrated that tech-enabled homecare offerings may again prove useful despite over-heated investment that culminated in an unprecedented $200 million of failed, bungled, or pivoted home care startups – leaving the traditional home care industry largely unchanged. A far-reaching change began in 2018 to expand benefits for the chronically ill – resulting in the likelihood that in 2019 non-skilled in-home care services will be reimbursed under the Medicare Advantage (MA) program, which covers a third of Medicare beneficiaries. This change will no doubt drive 2019 interest in labor-saving caregiving technology in both home care and senior living settings.



***DID YOU KNOW** that starting in 2020, Medicare Advantage plans can provide telehealth services as a replacement for in-person visits?*

Digital health usage grows in some categories. The Digital Health Summit at CES 2019 was bigger than ever – with 4000 exhibitors across 2.7 million square feet and crowded among more than 160,000 attendees – but with all that, technology for older adults could be found, with a number of offerings that could be of benefit if broadly marketed and resold. In addition, according to Rock Health's 2018 Beyond Wellness report, adoption of online digital health tools continues to rise, notably in online search (see **Figure 4)** and **Figure 5).** While wearables are now more popular in 2019 for adults aged 55+, seniors aged 65+ are still unlikely to own them.

Caregiving – the notable apps live on – but 2018's AARP series adds to the list. Recent data indicates that 22% of adults age 85+ need help with personal care. According to Caring.com, the best caregiving ones from 2018 were well established before then, including **CareZone**, **Lotsa Helping Hands** and **Caring Bridge**. AARP ran a series of useful tech articles during 2018 that greatly expand the list of tech tools to help with caregiving. These articles included Caregiving Apps Get Smarter (smarter watches, hearing aids, jewelry), use of Remote Monitoring to Keep Older Adults Safe, and Virtual Reality Transforms Caregiving.

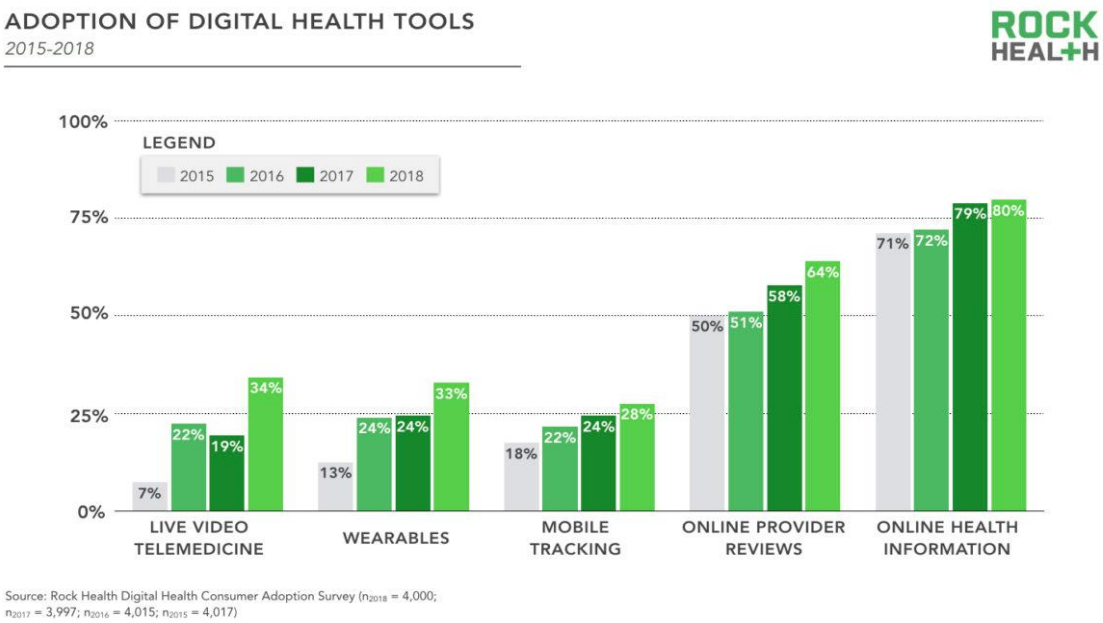


Figure 4 – Adoption of Digital Health Tools (source: Rock Health 2019)

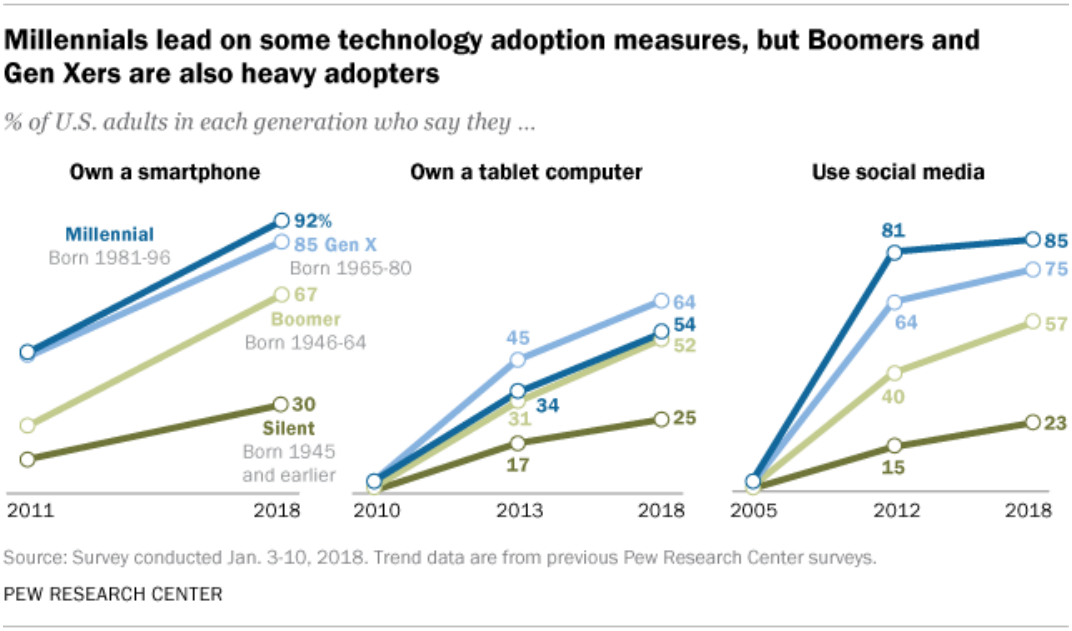


Figure 5 – Technology ownership of boomers and seniors (source: Pew Research 2018)

TECHNOLOGY UNDERPINS, DOES NOT REPLACE SERVICE OR FAMILY ROLES

The categories of technology offerings required to age successfully are comprised of four market segments – each useful in itself – but together, they provide a completed puzzle for maintaining connections, safety, health, and a more fulfilling and interactive life as we age. Further, these categories should be considered of value to caregivers as well as older adults (see **Figure 6**):

Communication and engagement. For baby boomers and younger, life is unthinkable without e-mail, chat, web surfing, Facebook, smartphones, video games, Skype, and texting. The majority of the oldest may be unfamiliar with these tools to help them be in touch and in the know. Many find their devices too complex, in constant need of patches and upgrades – and they rightly worry about data security and protecting themselves from fraud and identity theft. Simplified tech (for aged 75+) can provide senior-friendly interfaces on standard platforms – note **GreatCall** and **grandPad** devices (both using Android devices)**.** Larger, brighter and more expensive smartphones like the Samsung Galaxy Fold or the iPhone XS Max compete with today's general purpose tablets. And voice-first interfaces (like **Alexa**, **Google Assistant, Siri** or **Bixby**) raise the bar on in-home tech experiences for the growing population owning the devices.

Safety and security. The ability to remain at home depends on whether the home is free from obstacles and dangers – and how risks are addressed. Beyond retrofitting the home and activating home alarm systems to ensure privacy, seniors can be served by smart home sensors (IoT) and doorbell offerings like Ring and Nest. PERS vendors that get monthly fees from their PERS and call center businesses, including security system monitoring will expand to support more IoT devices. The market for mobile PERS services continues to grow – and expected within the industry to comprise $3.1 billion by next year. As for smart watches with health-related or PERS features, that market received a boost from Apple's introduction of the Series 4 watch with EKG and fall detection. PERS vendors and resellers are already showing interest in smart watches.

Health and wellness. The risks associated with obesity and lack of exercise only worsen with age. Health-related technology received enormous attention at the Digital Health Summit at CES 2019 and included a growing number of medication adherence tools, predictive analytics software, and smartphone apps. Even HIMSS, largely focused on the narrower Health IT market, included a number of technologies that involve patients directly. Sensor-based home monitoring technology has increasingly been marketed as remote patient monitoring (RPM). In 2019, CMS has shown new interest in reimbursing telehealth and remote patient monitoring, which should invigorate physician adoption.

Learning and contribution. Experts have noted that once the basic needs of communication, safety, and health are addressed (see Maslow's hierarchy of needs), people have both the need and capacity for more. This includes learning, staying aware and active in society, contribute through volunteering and continued work, and leaving a legacy of stories (not just money) for those who love them. Today, seniors can sort among online programs and auditable courses found through sites like CourseTalk or Osher Lifelong Learning Institutes**.** Due to the growing percentage (one in five) of workers aged 65+, some of the offerings, AARP or OATS for example, help an older person obtain technology skills that can prepare them to find a job.

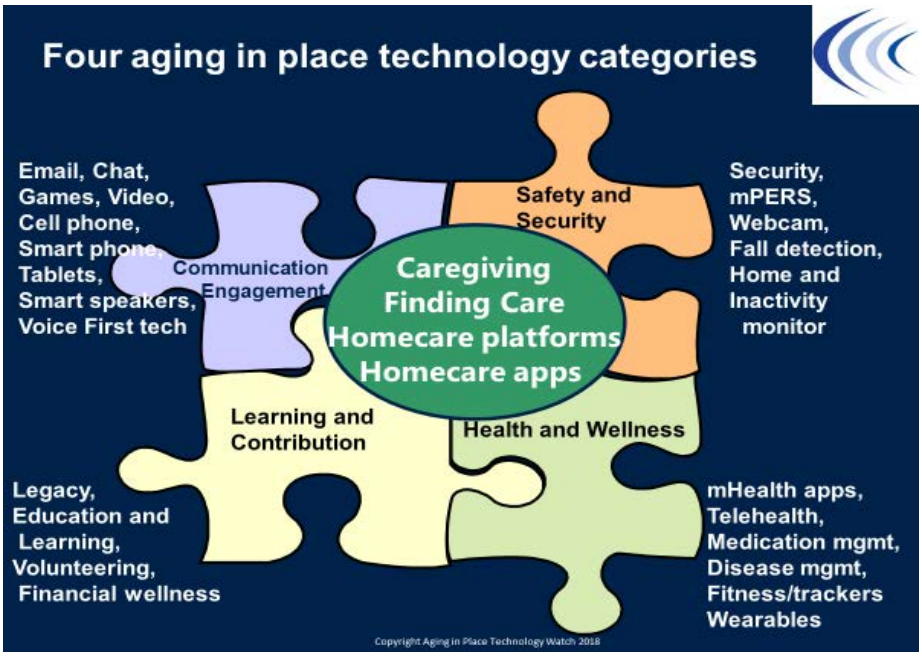


Figure 6 Technology categories with caregiving overlay

How Is A Complex Market Best Served and Actually Reached?

As the 2018 Pew Internet/Broadband Survey showed, 34% of the 65+ market is not online. If that population needs a technology or service, Facebook, Google and Twitter cacophony may not be the way to get their trust or attention. Instead, new entrants must form partnership early – at the pilot stage, with channels that understand the market and can resell, refer, recommend. And the caregivers of older adults are an untapped market, though an attempt was made in 2018 to explain to vendors what they need. The survey responders highlighted tools for care coordination, finding care workers, plus a smarter and lower cost PERS device that would serve as more of a caregiver communication platform. As caregivers, professionals, and families seek alternatives to help better serve older adults at home, what are the requirements for making technologies useful and reaching the intended market?

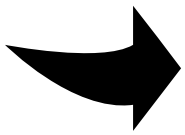
***DID YOU KNOW** that one in four adults age 65+ falls each year? According to the CDC, the estimated medical cost of falls across the U.S. healthcare system is $50 billion annually.*

Technologies must be well-supported and intuitive. Most people have a laundry list of frustrations with technology. Smartphones have become as ubiquitous for the young as they are under-adopted by the oldest (age 75+). The failure of previous direct-to-consumer approaches underscored the fallacy of inventor-centric thinking that if we create it, they will buy it from us or on Amazon. Instead, remote configuration and support partners must be a major part of the offering – or doom the user and family to frustration and scathing online reviews.

Device and app vendors must be capable of integration and extension. Despite standards initiatives or guidelines like the HIMSS Personal Connected Health Alliance or ONC Interoperability (2019), many of today's gadgets still don't communicate – into or out of the home, but especially with each other or applications that need the data (like Electronic Health Records). So mobile health devices, apps or medication reminders are useful, but touch a tiny aspect of the whole person. To provide valuable integrated solutions, software must use common standards to communicate to caregivers and providers, feeding predictive analytics and decision tools.

Costs to consumers must be affordable. As tech becomes more usable and useful, consumers and families will look for ways to acquire offerings that are affordable, perhaps with government subsidies. While insurers may soon reimburse, adult children and family will still play a supportive role. And higher income consumers will note that in-home bandwidth for their aging parents is a requirement. It enables Skype (or new offering **OneClick.Chat**) and it also powers voice-first tech like **Amazon Echo** or **Google Home** that support home automation and health information and interactions. These will be viewed as essential as the cell phone plans, GPS services, cable TV and many other monthly fees that are part of their technology vocabulary.

Upgrades will be invisible or painless. Consumers already gravitate towards software applications that mostly work with ones they already use, including Gmail, Facebook, FaceTime, YouTube or Skype and now Google Assistant – regardless of device. With content increasingly in the cloud, upgrade processes will be more seamless than the old 'No Going Back, You Must Upgrade or Else!' style. Tech vendors will make it easier to use personalized user interfaces (like Amazon and Netflix) that are recognizable across devices, a concept coined long ago in an AARP report as Technology Designed for All. And a single device – perhaps a voice first device or a listening application like Google Assistant – on a smart phone or interactive TV will enable spoken interaction with family, access to music, books, reminders, recipes, and photos.



DID YOU KNOW *that at CES 2019, Google announced one billion active Google Assistant devices and Amazon announced that it had sold 100 million Alexa-powered devices.in 2018?*

COMPETING PLATFORMS FOR AGING IN PLACE TECHNOLOGY

Technology platform alternatives narrowed in 2018 as Samsung dominated Android alternatives even as smartphone purchases are declining in a saturated market. But clamshell phones still have loyal users and consumers are owning smartphones far longer than vendors prefer.

Smartphone apps multiply – and disappear. In today's market, expect wireless devices to augment or serve both in-home and out-and-about needs. Good market penetration and simple operation is attractive – even better with an option for voice interaction. For baby boomers and their smart phones and tablets, health and safety apps are multiplying for Android phones via the Play store or iPhones via the iTunes store – not to mention Samsung Health and Apple's iOS Health. However, the devices are expensive – according to IDC, half in the US costing more than $600. However, security issues have users worried – whether it is identity or credit card theft – concerns about or always-listening apps or devices that ship data elsewhere.

Wearables become popular – and more ubiquitous. The Apple Watch Series 4 disrupted the senior wearables market with its built-in ECG and fall detection, as well as Apple's partnership with insurers. And further, it creates more opportunity for Apple watch-based competitors like Fall Call Solutions. Meanwhile wearables from **Fitbit**, **Garmin**, or **UnaliWear** or **MobileHel**p emergency watches plus any of a myriad of PERS offerings will penetrate the older adult market when combined with a trained call center always available to respond to emergencies.

PERS will see impact from wearables growth. Wearable forecasts were previously slashed but with new tech and vendor re-invention have been revised for growth (see **Figure 6**) with basic wearables losing traction over time. Recognizing that combinations of capabilities are becoming more relevant to older adults and families, by 2019 most PERS resellers will offer more attractive mobile devices, including bands and watches, that combine transactional PERS activity with predictive analytics – helping to prevent future injury and penalties from re-hospitalization.

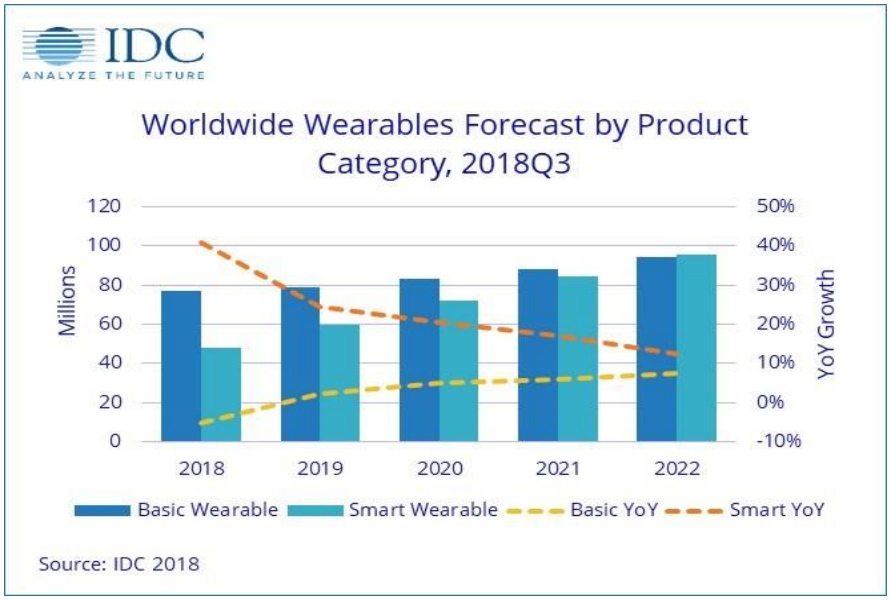


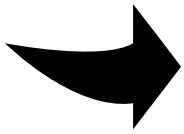
Figure 6 IDC Worldwide Wearables Forecast through 2022

Traditional tech is augmented by voice first smart phones, hearables and smart speakers. The PC, iPad and Android tablets – with unfettered access to the Internet, multiple voice enabled formats – offer the broadest device access to help seniors in their homes, whether it's searching for health information from **Mayo Clinic**, home retrofitting tips from **AARP**, or caregiving tips from **Caring.com**. However, outside of the home their use will increasingly be supplanted by ever-larger and somewhat portable smartphones. Furthermore, wearers of hearing aids are increasingly able to use smartphones to adjust devices and stream audio content directly to in-ear devices.

Data breaches and scams are on the rise, and so is the risk to seniors. The closing of physical locations like Social Security offices or bank branches should accelerate urgency of helping offline seniors to move online. Seniors and their families should be cautious, however, as 2018 also turned out to be a memorable year for data breaches, most notable were Marriott (hackers got into 500 million SPG accounts). In March 2018, eMarketer published its 2017 scam summary (See **Figure 7**) In addition, financial exploitation of the elderly is on the rise and creating more opportunity for scam avoidance technology and boosted awareness.

Age	Scam rate	Median loss
18-24	25.0%	$180
25-34	18.7%	$190
35-44	18.8%	$198
45-54	16.7%	$225
55-64	14.4%	$299
65+	13.2%	$380

Figure 7 Susceptibility Rate and Median Loss; Source: eMarketer.com)



DID YOU KNOW *that hackers accessed personal information of 30 million Facebook user accounts in 2018?*

ADVICE TO VENDORS: IT'S TECH-ENABLED SERVICES, NOT PRODUCTS

Probably the biggest issue that keeps more of today's technology out of the homes of seniors is the difficulty of marketing to them ("We are not old!") and their afraid-to-interfere adult children. Selling through knowledgeable channels, appropriate websites AND pricing right for resale and possible white labeling. Vendors must find:

The right customer – baby boomers and their roles. Direct-to-consumer marketing of products and services takes deep pockets for just the advertising – note the growing number of ads for low-cost hearing aids. To find the field testers and/or early validation of concept they need, companies may turn to Kickstarter and Indiegogo for visibility. For example, **GreatCall** did that in 2016 with an Indiegogo campaign intended to surface possible field testers for its new wearable.

Access to ongoing training and refreshers – much work needed. To be sure, the oldest are likely to approach smartphones as another variation of feature phones – until they can learn of their utility in a store, online, from their family, or in training centers in their communities. Automatic updates and application software changes will push users back to the store or family for refreshers to avoid considerable frustration. Despite the efforts of senior centers and other non-profits, training services will lag the pace of tech change and growing threats, including hackers' ability to pinpoint location and identity of the user.

The real need – perhaps can be a service problem solved. Despite market hype, seniors and their adult children may not imagine on their own what to do with sensor networks, web cams, or smart speakers. Someone with expertise needs to be able to explain the benefits, for example, of care coordination, when selling to a home health agency. Instead of offering point products out of context, vendors should fit solution descriptions, service provider stories, and senior support processes along the continuum of needed care and socialization. This necessitates a grasp of the decision points that spike need and interest to utilize in websites and marketing (see **Figure 8**).

Identify the right channel – it's about an ecosystem and indirect selling. The right channel depends on the complexity of the product and the target user. And less is more – remembering that 20% of channel partners typically contribute 80% of revenues. Reseller partnerships can offer reach extension, configuration or geography-specific service needs. For example, PERS vendors may market through multiple regional service providers, but price can vary for local markets. Others will gravitate to a larger and branded ecosystem enhanced with specific white-labeled offerings for home care agencies, pharmacies, senior housing organizations or insurance partnerships, many of these adding voice activation.

Partnerships matter – first as announcement-ware. Fresh posted announcements of partnerships are indicators of forward business motion. For example, in the past year, announcements of transportation partnerships to help older adults sprouted like weeds – but we may not see an announcement if they are weeded out. A few examples: Lyft Concierge and Blue Cross Blue Shield, MobileHelp and Samsung or UberHealth and Ambulnz. Success of these partnerships is impossible to measure, of course, and dissolution of partnerships (or for that matter, companies) is rarely announced.

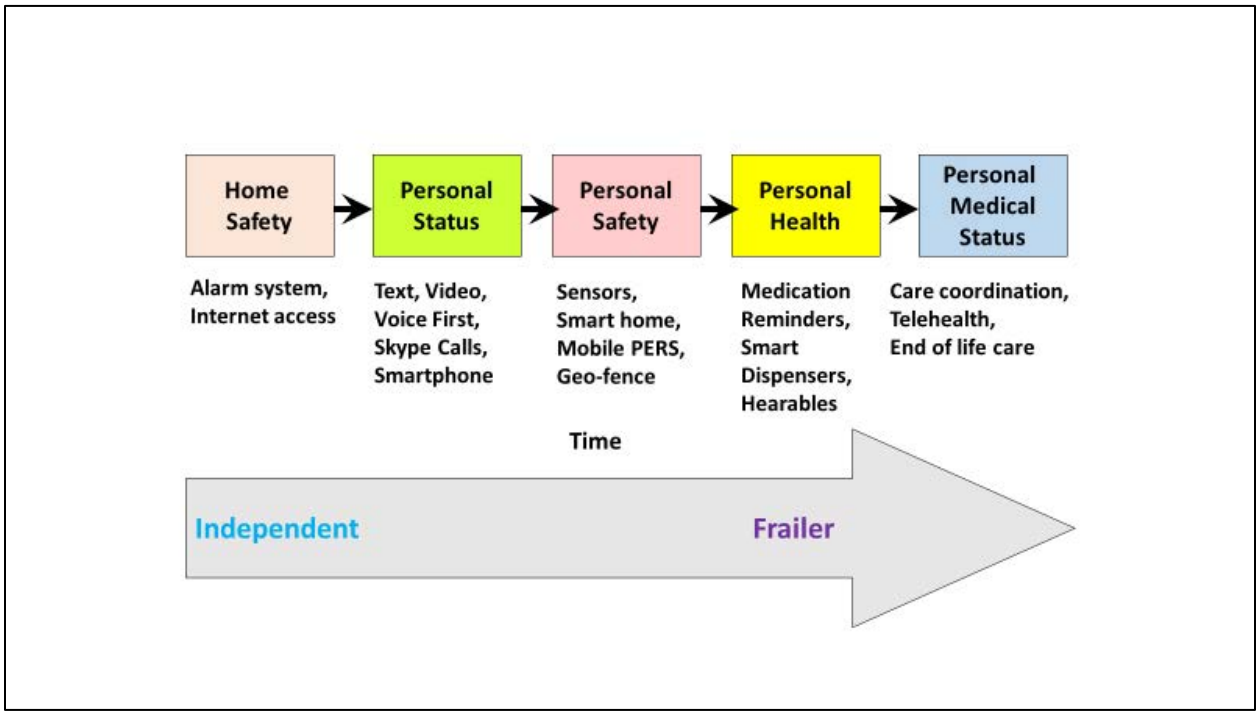


Figure 8 Technology needs of older adults evolve over time

HOW DOES THE AGING IN PLACE TECHNOLOGY MARKET EVOLVE?

The marketplace of products and services today is still fragmented, with ever-shifting cottage industries comprised largely of startups, challenged by channel complexity and end user resistance. But with fragments assembled into an overall puzzle, this business for boomers and beyond has been estimated to grow to $29.8 billion by 2022, according to the Consumer Technology Association (CTA). This larger market will be based on demographics and growing boomer tech awareness. It will be strikingly different from today – fueled by the growing availability of in-car technology; wearable fitness and health devices; in-home 'Voice First' IoT hubs; and smart phone ownership. And by 2020, the broader technology market will supplant a gadget-oriented marketplace and support software-based customizations and voice first interfaces for all, regardless of age (see **Figure 9**):

What are the key trends to watch in 2019?

As 2019 began, trends that became apparent in 2018 come into sharper focus. The market for technology for older adults will continue to grow, but it increasingly looks like the market of technology for all consumers, not just the elderly, as:

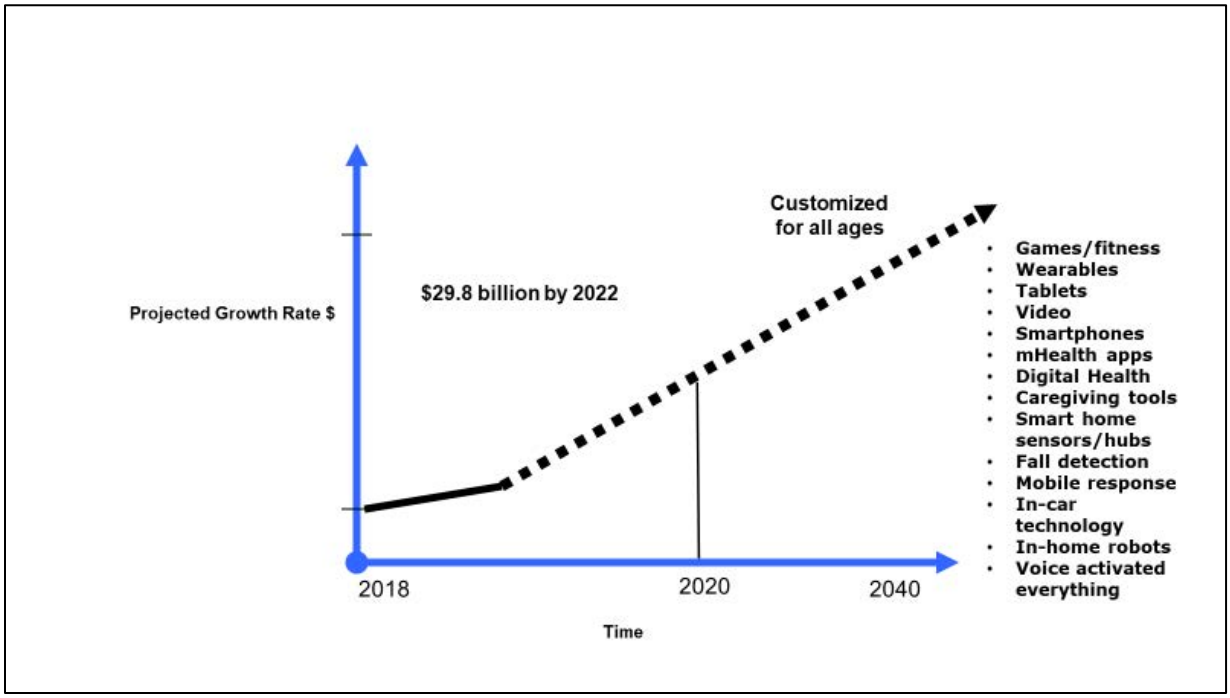


Figure 9 Where is the market headed – likely voice-activated everything

Voice-first interfaces will dominate apps and devices. We are still downloading apps, but that era may end – which will be an enormous improvement for older adults. Instead we will be experimenting with personal assistants or AI-enabled voice first **Amazon Alexa** technologies (Siri, **Google Home** and **Assistant**, **Amazon Alexa**) which can act as mini service provider interfaces – find an appointment, a ride, song, a restaurant, a hotel, or an airplane seat. Tools for

social networking, mapping, camera, and news will be voice enabled. And there will be a continuing wave of behavior modification apps, which currently seem to come and go with the tides of marketing hype – stop smoking, get moving, avoid too much sun, drink more water. Maybe your doctor will prescribe an app – many Silicon Valley startups folk believe (or hope) this will happen. Perhaps doctors who are not quite convinced will be interested in 2019.

Internet of Things (IoT) replaces sensor-based categories. The sensor-based home monitoring market that crested in 2008 was an early example of the possibilities that evolved later. A decade later, small sensors as well as the hubs that can detect and monitor them are becoming mainstream. This Internet of (smarter) Things, or IoT, encompasses locator tags, smart devices like wall plugs, thermostats, light bulbs, doorbells with cameras and even pet feeders. These can be managed through home hubs from Google, Amazon, Samsung and others. Voice-first hubs compete to be their own home and in-car control ecosystems.

Niche hardware will fade away – long live software and training. In 2019, will senior-focused hardware survive accelerating technology change? Yes, if it mitigates problems or conditions most notable in seniors – like hearing loss, dexterity or visual issues, or perhaps fall or wander risks. Otherwise, we will see software that will make hardware platform choices hidden or irrelevant, since seniors can choose custom or assistive configurations on a standard phone or tablet. And will tablets (even ones for seniors) be swept aside by smart speakers and smarter phones? Some will buy specialty devices meant for ease-of-use, but most seniors will be trained to use standard tablets or more likely learn about their smartphones in the store classes or at workshops for standard off-the-shelf products.

It's still Digital Health, begins now to acknowledge older adults. The dream of reimbursement for the category, especially remote monitoring, persists as the way to replace institutional technology (and budgets) for hospital/health systems, medical practices, and related IT departments. But in 2019 at HIMSS and the Digital Health Summit, vendors knew that older people matter, whether it is in health record interfaces, patient engagement, or health wearables. There is still ambiguity between categories of Digital Health, health IT, and so-called Personal Connected Health (including rare mention of older adults) when summit titles are coined.

Robotics and virtual reality will continue – as experiments. The press loves to write about robots and seniors. Still at the anecdote stage, widespread use of care-related robots in the home or in senior living communities hasn't happened and is not expected for years. Instead, robotic pets are growing in popularity in senior communities and private homes – no care and feeding required, plus the possibility of providing comfort to seniors who feel isolated or may have dementia. During 2018, more senior living communities also experimented with virtual reality.

LOOKING AHEAD IN 2019 AND BEYOND

For older adults, voice-enabled interactions will be preferred when they are possible and when cloud-based services are accessible. Why? Because it is easier for them. The Future of Voice First Technology for Older Adults 2018 describes the transformation from typing, pinching, zooming and glass screen frustration into a services world in which what you say should get you what you need. Furthermore:

An ecosystem of services evolves to help aging boomers and beyond. Aging-related service silos have observable overlap (home design, healthcare, services). Service-oriented hubs like AARP's Family Caregiver site may provide guidance about care options; non-profits like OATS may offer training in some geographies; aging-related product categories maybe delivered and serviced through Best Buy's Assured Living. Service-based providers focus on assisted living, nursing homes, financial services, and home care all serve seniors, but in different and generally unintegrated ways, which hopefully will change in an increasingly reimbursed landscape – with today's sharper focus on enabling seniors to remain in their homes as long as they can. Local integrators – drawn from ex-IT workers, security companies, senior housing, electronics dealers, remodelers or home care – are the right players to travel the last few feet into the home.

New developments and remodels will incorporate aging-in-place technologies. Some new higher end senior housing developers are pre-wiring housing with broadband, security monitors, tablets and motion sensors – in addition to wall backing for grab bars, standard wide doorways, and alternative kitchen counter heights. As boomer housing needs grow, other senior housing options will be upgraded or retrofitted with must-have tech lists. Boomers who will remain in their homes expect home networks, web cameras, and voice-activated security for personalized emergency response – and vendors will leverage these to sell them more sophisticated and connected applications. To reduce energy use, building codes will mandate environmental sensors, users will expect smartphone-controlled reset of temperature as the home is entered or exited. Paths from bed to bath will be automatically lit with nightlights and smart alerts.

Standalone offerings will be acquired or disappear. To date one-off innovations produced by well-meaning people ("I designed this for my grandmother") generate press attention, some customers, and typically disappear. Moving forward these will be replaced with integrated lower-cost solutions. Unique functionality may garner adoption by the most technically adept seniors. But for most of the aging population, a consistent underlying platform designed for all, not simply for the elderly, will be preferred – and channels of distribution that interact with the platform provider will be the preferred sources. Professional caregivers and health providers will begin to use smoothly connected voice-enabled or tablet-PC-smart phone platforms to gain visibility, propelling solutions into mainstream use.

Predictive analytics will become part of the new health product introduction lexicon. For technologies that track health, activity, behaviors, emotional status, or any other indicators of wellbeing, offerings will retain **opt-in** information in their own cloud data or that of a partner (like an insurer or healthcare provider). As accuracy of these devices and technologies improves, it will be necessary but insufficient to note that an activity has occurred without placing it in the context of a history signaling improvement or decline.

About the Author:

Laurie M. Orlov, a tech industry veteran, writer, speaker and elder care advocate, is the founder of **Aging in Place Technology Watch,** a market research consultancy that provides thought leadership, analysis and guidance about technologies and related services that enable boomers and seniors to remain longer in their home of choice. In addition to her technology background and years as a technology industry analyst, Laurie was a certified long-term care ombudsman and received a graduate certificate in geriatric care management from the University of Florida.

In her previous career in the technology industry, Laurie held senior positions in IT organizations, followed by 9 years as a leading industry analyst at Forrester Research. While there, she was often the first in the industry to identify technology trends and management strategies. She has spoken regularly and delivered keynote speeches at forums, industry consortia, conferences, and symposia, most recently on the business of technology for boomers and seniors. She advises large organizations as well as non-profits and entrepreneurs about trends and opportunities in the age-related technology market and was a participating expert on the Think Tank for The Philips Center for Health and Well-Being, the PCH Alliance Aging and Technology Task Force, as well as testifying before the US Senate on the role of technology for aging in place. Her perspectives have been quoted in Business Week, Forbes, Kiplinger, the New York Times, and the Wall Street Journal. She has a graduate certificate in Geriatric Care Management from the University of Florida and a BA in Music from the University of Rochester. Her other research reports include **Next Generation Response Systems (2013), Challenging Innovators to Design for the 50+ (2014),** and **Baby Steps: Will Boomers Buy into Mobile Health? (2015), Tech-Enabled Home Care (2017), The Future of Voice First Technology and Older Adults (2018), and Technology for Aging in Place Market Overview (2019).**

Aging in Place 2019 Technology Categories and Vendors (Example only vendors)

For inclusion as an example-only technology to facilitate aging in place, the vendor meets two of these criteria (those firms listed are only examples, not an exhaustive list). Because of the wave of relevant technology announcements during 2018-19, more startups, including pre-launch, are included than previous versions. In addition, please note that the 33 "**" entries are new for this publication of the 2019 Market Overview, though they may have been in business prior to its publication. The criteria:

a) Incorporate messaging to and about boomers and/or seniors – or their family or professional caregivers.
b) Is expected to be available across the continent, not just in a single region.
c) Addresses one or more categories described in this document.

	Sub-Category	Purpose	Platform	Contact
Category: Communication				
Amazon Echo Show	Cloud-based voice hub	Screen with voice-enabled AI access	Appliance	Amazon.com/ Echo
Bose Hearing Aid**	Hearing aid/hearables	Self-fitting	Hearing aid	bose.com
Breezie Tablet	Senior tablet	Simplified interface	Android	breezie.com
Embodied Labs**	Virtual Reality	Caregiver training	Experience Headset	embodiedlabs. Com
Google Home	Cloud-based voice hub		Appliance	store.google.com
grandPad	Senior tablet	Simplified interface	Android	grandpad.net
Intuition Robotics	ElliQ Companion	Virtual companion	Tabletop robotic companion	elliq.com
iN2L	Engagement System	Games, health, movies, spiritual content	PC Workstation, Android tablet	in2l.com
GreatCall Jitterbug Phones	Feature, smart phones	Simplified keypads connect to Call Center	Android smartphone	greatcall.com
JoyforAll Pets	Robotics	React and respond to touch	Toy	joyforall.com
Starkey Livio AI**	Hearing aid	Activity tracking, personalized	Hearing aid	starkey.com
MyndVR**	Virtual reality	Assisted Living	Experience Headset	myndVR.com
OneClick. Chat**	Video conferencing	Small, large group meetings	Online meetings and live events	oneclick.chat
Oticon**	Hands-free calls	Internet connected for IoT controls	Streaming to wireless hearing aids	oticon.com
Nuheara**	Hearables	IQ Buds Boost, Max	Hearing aid, Google, Siri Integration	nuheara.com
Rendever	Virtual Reality	Senior engagement	Experience Headset	rendever.com
Category: Home Safety, Security				
Apple Watch Series 4 **	Smartwatch	Fall detection, EKG monitor	iOS	apple.com/watch
Aiva**	Smartphone app	Voice-enabled health assistant	Amazon Echo	aivahealth.com
CarePredict Home**	Wearable	Senior health monitoring	Predictive analytics	carepredict.com
Essence Care@Home	IoT/PERS	In-home IoT devices	Alerting platform	essence-grp.com
Fall Call Solutions App**	Wearable	Fall detection, caregiver notification	iOS	fallcall.com

	Sub-Category	Purpose	Platform	Contact
GrandCare	IoT Monitoring	Remote caregiving	Touchscreen, portal	grandcare.com
GreatCall Lively Mobile	Mobile PERS	PERS wearable	Call Center	greatcall.com
iGuardstove ****	Stove shutoff	Notifies via text message	Device	iguardfire.com
Locate Motion Watch**	Smartwatch	Personal GPS Tracker	Wearable	locatemotion.com
MobileHelp SmartWatch	PERS Watch	Samsung health integration	Wearable	mobilehelp.com
MyNotifi	Fall Detection Wearable	One-time fee	Wearable	mynotifi.com
Numera**	Mobile PERS	With fall detection	Wearable	numera.com/libris
Philips Cares**	Smartphone app	Manage care circle for Philips products	Mobile App	
Sound mind**	Caregiving, voice first	Manage voice assistants in senior living	Amazon Echo	soundmindinc.com
TruSense	IoT Monitoring	Voice-enabled passive monitoring; GPS tracker	Amazon Echo interface	mytrusense.com
UnaliWear	Mobile PERS watch	Voice-enabled mobile PERS	Bluetooth low energy	unaliwear.com
Category: Health Wellness				
Kardia Band**	Wearable wristband	Creates report of cardiac pattern	EKG monitor wristband for Apple Watch	alivecore.com
Livongo	Diabetes App	Portal plus app	Integrates trackers	livongo.com
MedMinder	Cellular	7-day, 4-dose per day reminder trays	Prefilled trays from pharmacy	medminder.com
MedaCube**	Medication dispenser	Manages a 90-day supply	Donated devices targeting non-compliant segments	medacube.com
MediSafe	Medication compliance app	Notifies 'Medifriend' if doses are missed	Deployed in partnership with pharma, research	medisafe.com
Orbita	Voice-enabled healthcare	HIPAA-compliant Conversational platform	Enterprise software for healthcare systems, groups	orbita.ai
ReemoHealth **	Health Smartwatch, analytics	Remote mobile health platform	Senior living, senior care, healthcare	reemohealth.com
Synzi**	Telehealth	Virtual care platform	Communications for care teams	synzi.com
Syren**	Socks	Diabetic foot monitoring	Prevent foot ulcers	siren.care

	Sub-Category	Purpose	Platform	Contact
WatchRx**	Health Smartwatch	Reminders, Caregiver alerts	Medication, GPS tracking	watchrx.io
Finance/Transportation				
LifeSite	Family records	Caregiving financial records	Store, manage family care documents	lifesite.co
EverSafe**	Fraud protection	Seniors and families	Detection and alert system	eversafe.com
Uber Health**	Healthcare appt rides	With uberAssist, door-to-help for disabled	Ride-hailing service paid by organizations	uberhealth.com
Intuit Mint**	Finance	Manage banking accts, finances	Budget for aging parents	mint.com
Lyft Concierge**	Includes healthcare appointment rides	Flexible ride scheduling by sponsor organization	Ride-hailing service paid by organizations	lyftbusiness.com/healthcare
TrueLink Financial	Financial services for older adults	Protect assets and track payment activity	Payment cards, investment management	truelinkfinancial.com
JoinPapa**	Grandkids on demand	Transportation, chores, socializing	College students	joinpapa.com
Category: Caregiving (Platform, Apps)				
CareLinx	Non-agency home care marketplace	Families, organizations find workers, rides	Marketplace of registered workers	carelinx.com
CarePredict	Care management	GPS tracking, reporting	Care professionals	carepredict.com
Caremerge		EHR, Resident engagement, Calendar	Senior living	caremerge.com
CareTree	Care management	Care management platform	Coordinate tasks for families, care professionals	caretree.me
CareZapp**	Care management	Care platform	Connects existing services	carezapp.com
ClearCare	Manage home care agency	Home care agency platform	Manage home care agency tasks, EVV-compliant	clearcareonline.com
Honor Care Network**	Home care	Home care operations platform	Market, manage home care agencies	joinhonor.com/care-network
Livpact	Care management	Care management platform	Coordinate tasks for families, care professionals	livpact.com

	Sub-Category	Purpose	Platform	Contact
LifePod	Voice First Virtual Caregiver	Proactive voice-enabled care solutions	Voice first care for home and home health, senior living	lifepod.com
PointClick Care	Care management	Cloud platform	Senior care, SNF, home care	pointclickcare.com
Zanthion**	IoT and home monitoring seniors	Tracks falls, environment, analytics	Senior living	zanthion.com
Category: Learning/Contribution				
learn@50+**	Training	Tech, caregiving, work, skills	Online, workshop Education	learn.aarp.org
LifeBio	Storytelling	Digital life stories	Memoir-writing services	lifebio.com
Memory Well	Storytelling	Digital life stories	Professionally written	memorywell.com
MyHeritage	Family history	Stories and family tree	online tool	myheritage.com
OATS	Training	Tech, job skills	Regional workshops	seniorplanet.org
Osher Lifelong Learning	Lifelong learning	Senior-focused courses	Nationwide network	osherfoundation.org