



Technology for Aging in Place

2011 Market Overview

October 2011

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WHO SHOULD READ THIS REPORT?

This report, revised in October, 2011, is a market overview with a single purpose: it is intended to describe the need for and the current market of technology to help aging adults live full lives in their homes of choice. As such, it is relevant to:

- Vendors within or considering entry into the **Aging in Place Technology** market of baby boomers and seniors
- Social networking sites targeting baby boomers or seniors
- Continuing Care Retirement Communities (CCRCs)
- Assisted Living Facilities (ALFs)
- Senior housing developers
- Home care agencies
- Geriatricians
- Hospitals and integrated service delivery networks
- Government agencies and policy makers
- Geriatric care managers
- Naturally Occurring Retirement Communities (NORCs),
- Virtual Villages
- Intentional Communities
- Caregivers, seniors, and family members



AGING IN PLACE: AN EXPECTATION AND A TECHNOLOGY MARKET

“Before the tech revolution, the village took care of you. Now we will have an electronic village.”

Eighty percent of older people today live in their own homes.¹ Not surprisingly, the majority of them would like to stay there – and if they move, according to the AARP, it will be to another private home.² The desire to live at home will dominate the minds of baby boomers, in 2011 becoming seniors (age 65) at the rate of 10,000 per day, and will reshape the markets that provide products and services to them.³ Further, in the 2011 housing market crisis, many who would move to more appropriate homes cannot.⁴

Within that context, aging in place reflects the ability to successfully age and remain in one’s home of choice, whether it is a private home, condo, apartment, or group home. MetLife published a vision in 2010 called **Aging in Place 2.0** that reinforces why the technology to enable this is so important now – versus years from now.⁵ That’s because:

- **Successful aging means independence.** Nobody wants to think about becoming old -- but improved medical treatment and growing life expectancy has resulted in the 80-plus becoming the fastest growing demographic.⁶ When asked what’s important for successful aging, seniors rank as the most important: ‘being in good health, having the ability to do things for myself, having friends and family there for me, and feeling safe and secure.’⁷ And studies have shown that older persons who live independently have more positive self-esteem than those who are institutionalized.⁸
- **Cost of long-term care is daunting.** MetLife has pegged the average cost of an assisted living facility (ALF) apartment in the US in 2010 as \$39.5K/year, with nursing homes at \$85K/year.⁹ Meanwhile, their cost projections show an ALF cost that is growing to \$51K by 2015.¹⁰ Unlike nursing homes, which can be covered under Medicaid, more than 90% of assisted living costs are paid out of pocket.¹¹ The ability to *keep* paying for ALF care depends on availability of long-term care insurance, sizable savings, or proceeds from the sale of a home – all three jeopardized by late 2011 from a weak economy, falling value of assets, or inability to sell a home. Otherwise, seniors may have to move to Medicaid-eligible nursing homes.
- **Care capacity will reach crisis proportions.** As people age, the numbers of chronic conditions and related care requirements grow. And for a variety of reasons, including cost and availability, care of the aging population has already begun to migrate from nursing homes to assisted living and increasingly to home-based care.¹² But it is very clear from age-related trends that there will not be enough caregivers to help them age at home if need care. This care gap is a result of convergence of a growing senior population, increase in life expectancy, looming healthcare issues, and a relatively flat population of younger women -- still the source for primary home care, assisted living, and nursing home aides (see **Figure 1**).¹³



The looming crisis of care

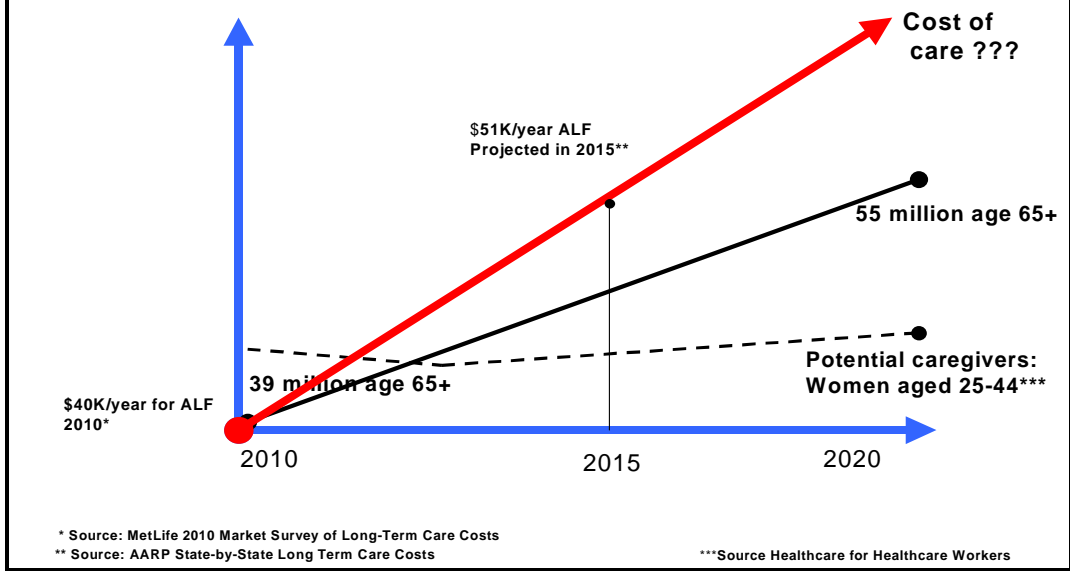


Figure 1



- **Technology capabilities exist now – and seniors are willing.** First and foremost, technology to help age in place is at its most available and lowest cost to date. It is the first time that platform adoption of cell phones, game units, PCs, tablets, high speed Internet and video is enough to merit the tentative but steady entrance of new and existing vendors. Next, baby boomers, the majority of adult children, own more tech than any previous generation. Because of their access, today is the first time we can connect multiple generations of families with each other -- and with their care providers. What's more, studies show that seniors and caregivers are interested, but not necessarily aware of what exists (**see Figure 2**). A consolidated look at Pew Research findings from 2011, however, indicates that seniors are not significant users of communication technologies, especially the latest tablets and smart phones (see **Figure 3-a** and **Figure 3-b**).

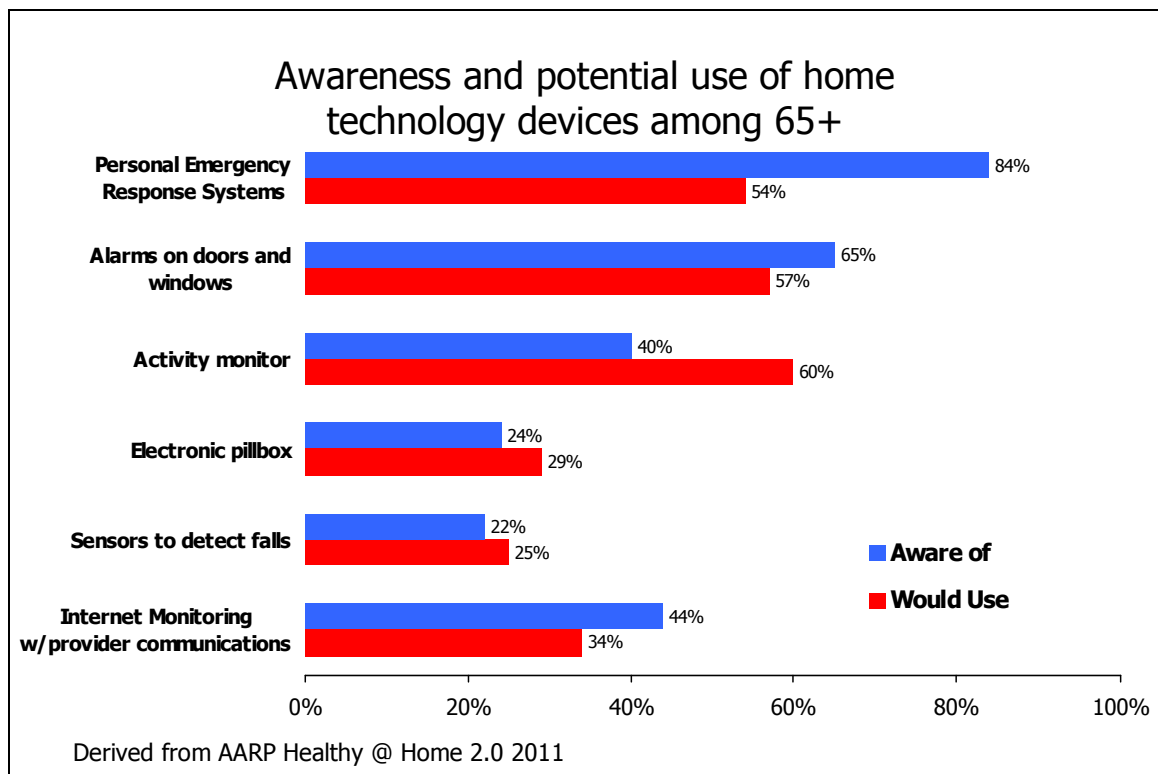


Figure 2



**Older adults and Internet
technology (Pew Research 2011)**

| Category | All | Boomers (50-64) | Seniors (65+) | Comment/ Example |
|------------------------|-----|-----------------|---------------|-------------------------------------|
| Online | 79% | 78% | 42% | % of all adults |
| Use search daily | 59% | 52% | 37% | % adults w/Internet |
| Use video sharing site | 71% | 54% | 31% | View YouTube, % adults use of video |
| Seek Health info | 59% | 58% | 29% | % adults w/Internet |
| Social network | 61% | 47% | 26% | % adults w/Internet |

Figure 3-a

**Older adults and online
technology (Pew Research 2011)**

| Category | All | Boomers (50-64) | Seniors (65+) | Comment/ Example |
|------------------------|-----|-----------------|---------------|--------------------------|
| Have cell phone | 85% | 85% | 58% | % all adults |
| ...Smart phone | 35% | 24% | 11% | % all adults |
| Internet calls | 24% | 19% | 18% | % all adults |
| Have E-Reader | 12% | 13% | 6% | % all adults |
| Have a tablet | 8% | 8% | 2% | % all adults |
| Have mobile health app | 9% | 6% | 5% | % adult cell phone users |

Figure 3-b

What Does It Take to Successfully Age in Place?

More than 25%, 10 million seniors, of those aged 65+ live alone.¹⁴ Many of the adult children of today's oldest seniors worry with good reason about their parents – and struggle with them over whether they should be living on their own. And the National Institute for



Nursing Research states that “one third of informal caregiving occurs at a distance with family members coordinating provision of care, maintenance of independence, and socialization for frail elders living at home.”¹⁵ What do these families need?

- **Better communication.** Seniors living alone and away from informal caregivers are at risk of cutting themselves off or being cut off from others – whether due to hearing loss or inability to leave their homes.¹⁶ Their long-distance family members struggle to know what’s going on -- and healthcare providers offer few mechanisms for communication. The result can be frustration and unplanned moves closer to family, into independent or assisted living facilities.
- **Improved safety and monitoring.** Many seniors struggle to take care of themselves, to accomplish activities of daily living (ADLs) due to mobility issues or worsening dementia. And many homes are danger zone of stairs, rugs, and bathing and cooking hazards. As a result, 31% of people age 65+ suffer a fall that permanently affects their mobility – whether it involves adding a cane, walker, or wheelchair to their lives.¹⁷ Even with hazards removed, remaining in the home in which they fell can be frightening.
- **Greater focus on wellness and prevention.** Seniors are too often forced out of their homes or into greater levels of care as a result of hospitalizations.¹⁸ Depending on the nature of the resulting illness or complication, doctors determine if living safely at home is still feasible. And hospital discharge processes push most seniors into rehab and permanent moves to assisted living or nursing homes, when with proper support they might be able to function at home. The Federal “Money Follows the Person” program launched in 2005 is now rolling out through the states and can help transition nursing home residents into the community -- with appropriate levels of support.¹⁹
- **More opportunity to participate in society.** But becoming frailer at home shouldn’t imply a hard stop for contributing to life outside the home. In a recent study by AARP, 34% of senior responders reported limits on basic physical activities, two in five reported low vision or hearing impairments, and fifteen percent reported problems learning, remembering, or concentrating.²⁰ But at the same time, 66% felt it was very important to stay involved with the world and with people, and 57% said it was very important to continue to learn new things.

Aging in Place Spans a Triangle of Relationships

A critical enabler for aging in place is a working set of relationships and communication between seniors, their families (both caregiver and long distance) or proxy caregivers, and providers of services to seniors and their families. This triangle of relationships should be reinforced with smart use of technology, but today suffers from weak or no connections: too ad-hoc, too phone- or paper-based, too labor-intensive, and too narrowly conceived (see **Figure 3**):

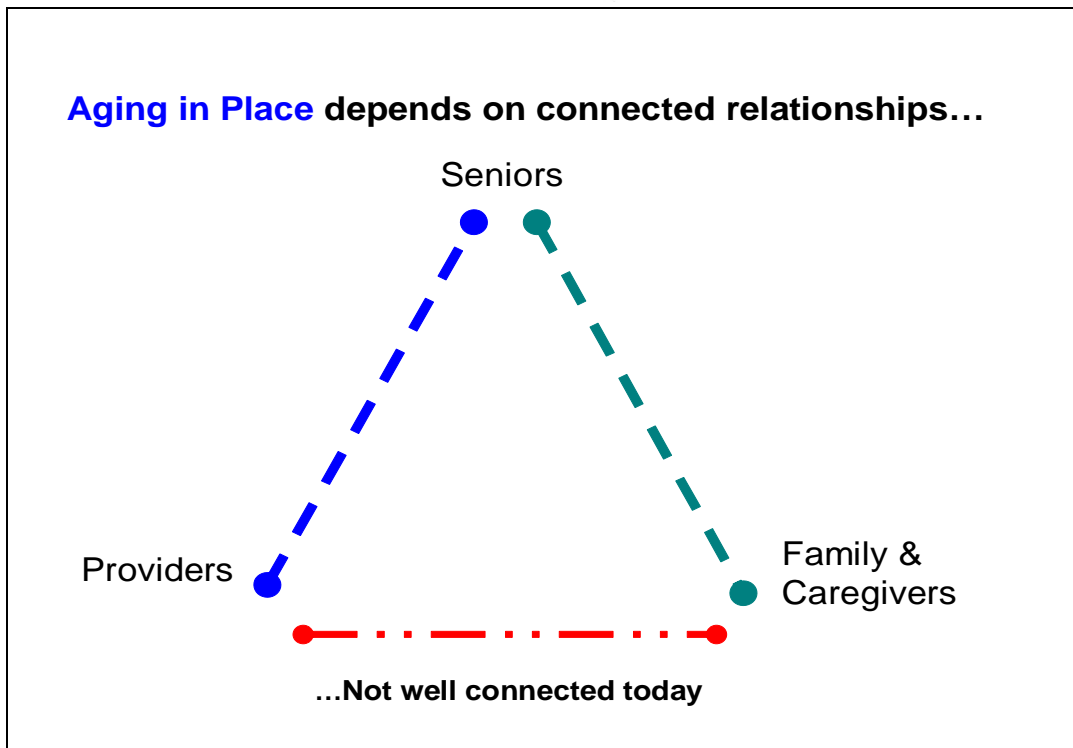


Figure 4

- **Seniors.** It's true that baby boomers will skew the population distribution and change the way we age, beginning in 2011 when the oldest began turning 65. But already there were over 39 million seniors over the age of 65 at the end of 2010, 13% of the US population.²¹
- **Family & caregivers.** Family caregivers often take an interest in and provide some sort of oversight to seniors – either spouse or parents – in fact, as many as twenty-five percent of families today care for someone outside the home.²² In a recent survey of caregivers who use technology, two-thirds believe that web-based and mobile technology would be helpful to them, although perceived cost was often noted as a barrier (see **Figure 5**).²³

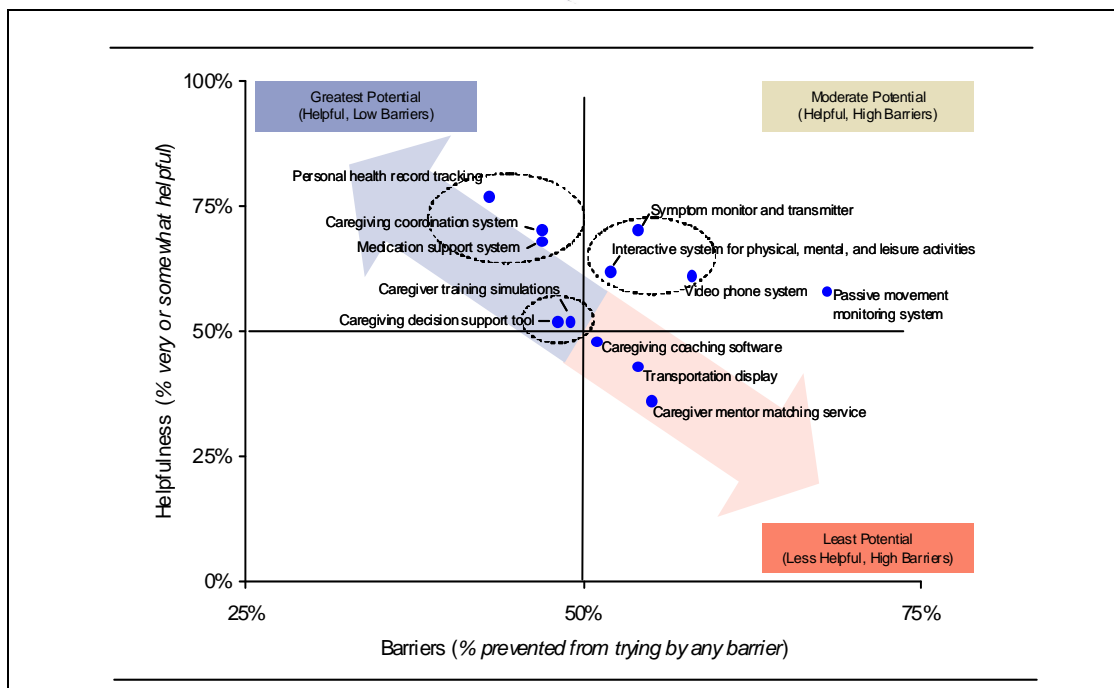


Figure 5 (Source: eConnected Family Caregivers January 2011)

- Providers of services.** Those with direct contact with seniors and their families include: social services, hospitals, doctors, nurses, councils on aging, assisted living, and home care organizations. This is the weakest technology link in the triangle, though it may have the greatest potential for keeping seniors in their homes. Today 51 percent of doctors in small offices, for example, have electronic medical records (EMR), a minimum for sharing personal health record (PHR) information from seniors or with families, and two-thirds or more in larger practices do so.²⁴ EMRs include the basic diagnosis and drug information at hospital discharge (often to a nursing home/rehab), yet as of 2007, only 41% of home and hospice care organizations use EMR.²⁵

TECHNOLOGY FOR AGING IN PLACE TODAY – ENABLED RELATIONSHIPS

Successful aging and remaining at home can be substantially improved today by simply sharing information and creating linkages between participants. Consider this scenario made possible with technologies that exist and can be mixed, matched, purchased or used *today*. The scenario (see **Figure 6**):

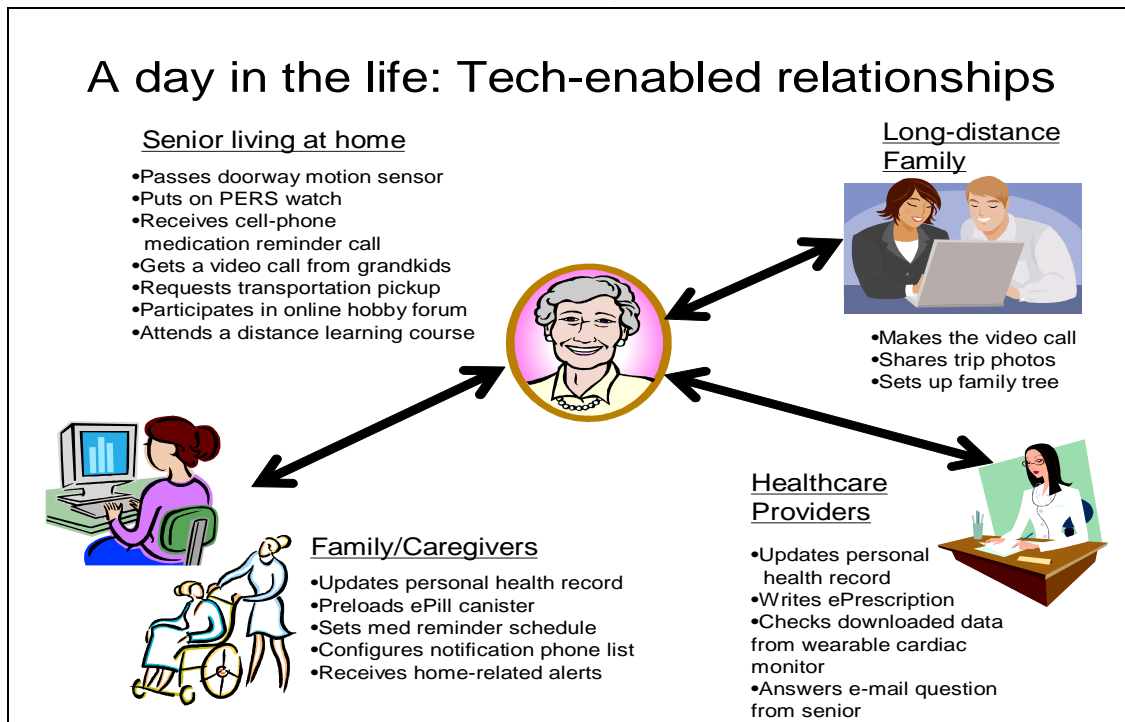


Figure 6

- **Senior living at home.** Margaret, an 88-year-old widow, lives alone in a senior housing development in Florida. She rises in the morning, passes a doorway motion sensor that remotely updates a security system, configured to alert caregivers if it is not activated by a specific time. She puts on her mobile personal emergency response system (mPERS) watch, receives a call on her cell phone or land-line that reminds her of a morning medication, presses a button on the 7-day pre-loaded pill canister, takes her pills and indicates such on her phone. Later that day, she receives a videophone call from her grandchildren in Pennsylvania and tells them a bit more about her family history for their ancestry project. She goes online to request a transport pickup to take her to the senior center, and then checks in with her favorite online hobby forum through her easy-to-use computer. At the senior center she participates in an exercise session or class. When she arrives at home, she calls in to a telephone-based course.
- **Family/caregivers.** Margaret's adult daughter Irene lives an hour away and visits weekly and takes her to doctor's appointments. In consultation with her mom, she configures the medication reminder schedule and uses a website to set automated check-in phone calls while she is at work. Before taking her mom to the doctor, she ensures that her mom's personal health record is up-to-date and sends an e-mail question to the nurse. Irene and her mom have agreed that she and home care aide Julie will receive only exception-based alerts about her mom's comings-and-goings and medication use.
- **Long-distance family.** Other long-distance adult children of Margaret's are alerted in the event that Irene or Julie is unavailable. These family members use internet-enabled video calls, e-mail, chat, and phone conference calls to stay in touch with Margaret between in-person visits. They send photos through e-mail that Margaret receives via fax – others could use an e-mail appliance, printing mailbox or print from a senior-friendly PC.



- **Healthcare providers.** Margaret’s primary care nurse practitioner, Suzanne, knows her and her family – and makes sure that referred specialists and her primary care doctor have the most up-to-date electronic health record. The health center where Suzanne practices is up to date with the latest EMR systems and online prescriptions, using it to communicate directly with Margaret’s nearby pharmacy. Margaret has a history of cardiac problems and with the help of caregivers is regularly checked with home-based diagnostic devices whose data is transmitted to the doctor’s office as needed.

Four Aging in Place Technology Categories Have Emerged

The above scenario is **not a vision for the future**. It is feasible with technology available today, – listed separately in Appendix I and further discussed at www.ageinplacetech.com. These technologies promise to help tighten and grow care provider relationships, improving the ability to age more successfully, remain at home longer and more safely, and better weather change over time (see **Figure 7**):

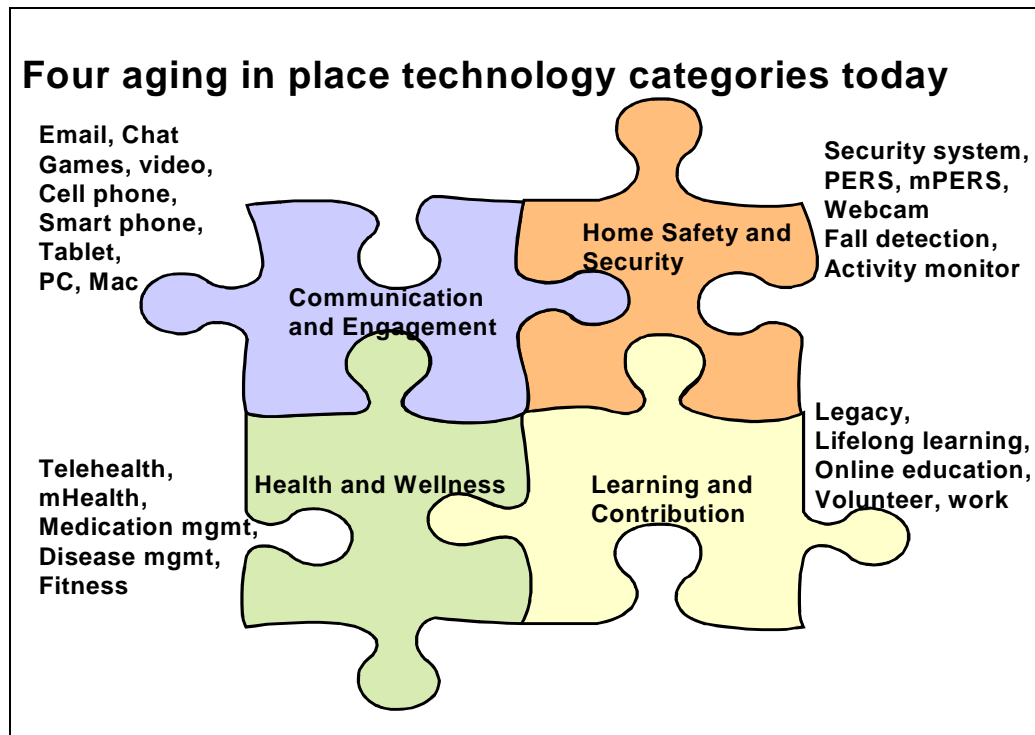


Figure 7

- **Communication and Engagement.** For baby boomers and younger, life is unthinkable without e-mail, chat, web surfing, Facebook, Smartphones, video games, Skype, and texting. Yet the majority of seniors over the age of 75 are for the most part unaware of these 24x7 ways to be in touch and in the know.²⁶ And further, many older people are intimidated by tech like PCs and complex cell phones. But they need to stay in touch. Simplified tech -- like **Cisco’s Valet** wireless router or easy-to-use cell phones from **Great Call** or **Just5** or well-lit and customizable **Android, Apple,** or **BlackBerry** smartphones can make these experiences feasible and gratifying. Once online, seniors and their long-distance grandchildren can chat, video chat or enjoy reading books together through a video book-reading service like **Readeo**.



- **Safety and Security.** The ability to remain in one's home depends first on whether the home is free from obstacles and dangers – and whether those risks are addressed. Homes can be attractively retrofitted and become barrier-free by a Certified Aging in Place specialist (CAPS).²⁷ Further, security systems from **ADT**, mobile personal emergency response systems like **MobileHelp**, or PERS with passive fall detection from **Halo Monitoring, ActiveCare, or Philips**, sensor-based home monitors (**QuietCare, BeClose, WellAWARE, AFrameDigital** and **GrandCare**) could help monitor and reassure seniors and caregiver.
- **Health and Wellness.** The risks associated with obesity and lack of exercise only worsen with age, so it's no surprise that **WiiFit** has become so popular with boomers and seniors.²⁸ The 2011 introduction of Microsoft **Kinect** is likely to make a splash among older adults as well as commercial application development begins. For chronic disease management, vendors like **Intel, Bosch** or **Ideal Life** offer systems for remotely monitoring chronic diseases like diabetes or congestive heart failure. Over time, integration of these with health systems' EMR will become standard.
- **Learning and Contribution.** In 2006, Joseph Coughlin of MIT's AgeLab applied "Maslow's Hierarchy of Needs" to Aging in Place.²⁹ He noted that once the basic needs of communication, safety, and health are addressed, people have both the need and capacity to read (on a **Kindle** or **iPad**, for example) and learn, stay active in and knowledgeable about society, contribute to it through volunteering and likely continued work, and leaving a legacy of stories, not just money, for those who love them. Seniors can sort among online programs and auditable courses found at sites like **SeniorNet.org, New York Times Knowledge Network, Dorot University without Walls** or look for work on **RetirementJobs.com** or **RetiredBrains.com**.

Family and Professional Caregiver Links Overlay Categories

Family, professional caregivers and their clients are beginning to expect that they will, along with the senior, participate in the use of technology categories (see **Figure 8**).

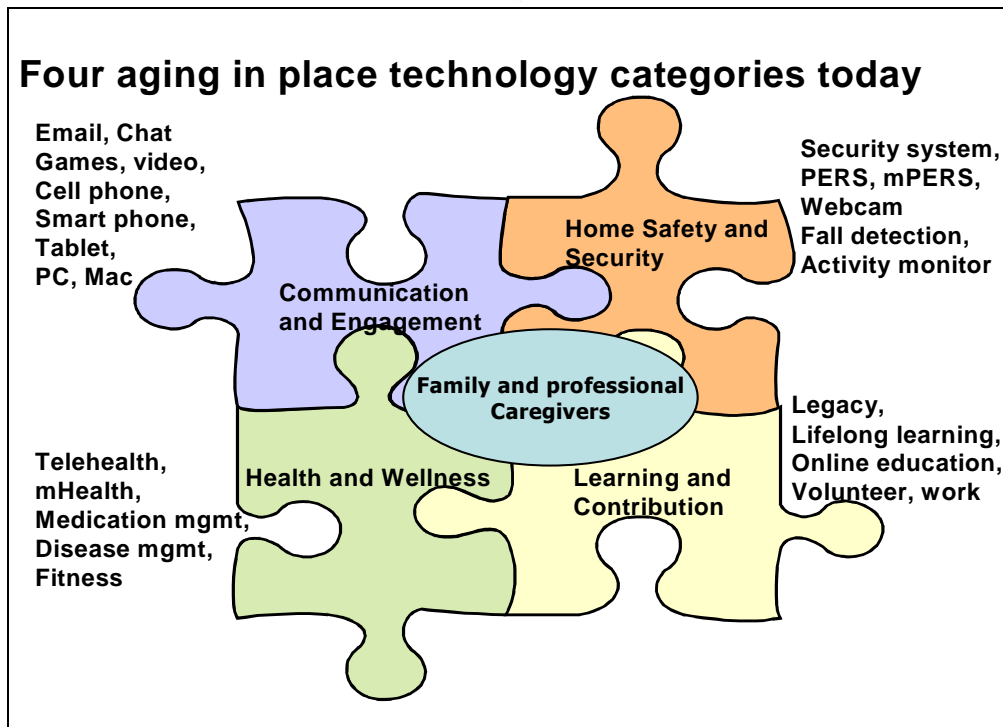


Figure 8

- **Family members have growing expectations for connectedness.** Today, picture sharing, social networks, video chatting, and text messaging are the mainstream mechanics for families – who will succeed at including aging parents in the loop of one or more of them. And when home monitoring and PERS devices are purchased, family members may be both the purchaser and rule configuration administrator for who to notify about what pattern changes or emergency alerts, with or without a call center intermediary. Vendors like **eCareDiary** and **Connected Living** offer portals for family caregivers and seniors to share information, **Caring.com** and **Care.com** provides tools for caregivers. **Coro Health** offers capability to configure music and spiritual content for seniors with dementia.
- **Professionals, health, GCM, and companion agencies – will link in families.** When a national Geriatric Care Management organization trains its staff to use Skype to connect clients to families, it's a sign that professionals believe they must link families into their process.³⁰ These offerings will likely not be revenue generators, but rather added to standard home health systems to enable providers to update all family members at once, much in the way that **CaringBridge** enables families to provide patient updates on a private website, rather than spend an hour or more on the phone each day providing status.

Requirements for Aging in Place Technology Market Success

Across all these categories, a number of common requirements are emerging that will grow in importance as the market grows. Customers will demand products that are as attractively designed and easy to use as a game or tablet, ubiquitous as a cell phone, and as extensible as a PC. For this market to further mature:



- **Technologies must be more intuitive, easy-to-use, and well-supported.** Most people, at every age, have a laundry list of frustrations with technology. AARP's survey about seniors and technology asked responders if they were concerned about the availability of customer service reps. No surprise – most said yes. Service (online, telephone, remote) is an essential ingredient in a go-to-market strategy. And ease of use means ease of setup. Remote or zero configuration and exception management will be a major part of the offering – or doom the product to failure. And focus groups and home trials reveal greater technology resistance than any 'what-if' surveys.
- **Vendors must be capable of integration and extension.** Many of today's gadgets don't communicate – into or out of the home, but especially with each other. So a medication reminder device is useful, but touches a tiny aspect of the whole person. Those who care about seniors like Margaret must know that she has responded to the reminder and, if she is willing to share, how her behavior changes over time. To provide valuable integrated solutions, software will use common network standards to communicate to caregivers and providers.
- **Costs to consumers must be affordable.** As tech becomes more usable and useful, consumers will look for ways to acquire it. This may occur through payers, but is more likely through adult children and family. Higher income consumers will come to realize that services associated with technologies like webcams and chronic disease monitors that provide value are just as essential as cell phone plans, GPS services, cable TV and many other monthly fees that are now part of their technology vocabulary.
- **Products must be available on widely adopted platforms.** A growing number of retirement communities are adopting Nintendo's **Wii**; and cognitive fitness technologies are making their way into both retirement and seniors' homes. But too many interfaces are confusing. So consumers may gravitate towards applications that work with ones they already use, including Facebook. Even better, in the future, vendors will make it easier to use personalized user interfaces across multiple devices, coined in a 2011 AARP report as 'Design for All.'³¹ Perhaps even a single device like a smart phone (or a TV) will drive interaction and content, and other devices in the home will simply act as displays.

COMPETING PLATFORMS FOR AGING IN PLACE TECHNOLOGY

An aging in place technology platform battle is underway – vendors are deploying among:

- **Computer- and tablet- based.** The PC and MAC – with unfettered access to the Internet and multiple app formats – still offers by far the broadest access to technologies to help seniors remain in their homes, whether it's searching for health information from **MayoClinic.com**, home retrofitting tips from **AARP**, or improving cognitive fitness with **Posit Science**. With the wealth of available PC/tablet applications comes complexity, for some that may need to be masked with simplification interfaces like those from new vendors **Telikin**, **IntouchLink**, or **PointerWare**.³²
- **Wireless phone and tablet – smart or feature.** Up next in today's market, expect that the wireless phone and web – at least 57% of seniors and 80% of boomers own them. Good market penetration and simple operation is attractive, especially for reminders, alerts, simple Internet search, texting, and even GPS location applications. For baby boomers and their smart phones and tablets, targeted health apps for the iPhone



(**SugarTracker** and **BPBuddy**), Android (**FitSync** and **Absolute Fitness**) and Blackberry (**DietCalculator** or **EmergencyInfo**) are exploding and wireless smart phones and their tablet counterparts like the **iPad 2** or the **Kindle Fire** will be an increasingly compelling mass-market information delivery platform, even perhaps, as Eric Schmidt of Google predicts, eliminating PCs over the coming decade.³³

- **Game platforms.** There are 183 million active gamers today -- **Nintendo** alone sold 15 million game consoles in the US as of the end of 2010.³⁴ As Jane McGonigal, author of “Reality is Broken” notes: “Institute for the Future has shown that games consistently provide us with the four ingredients that make for a happy and meaningful life: satisfying work, real hope for success, strong social connections and the chance to become a part of something bigger than ourselves.” Launched in late 2010, Microsoft’s **Kinect**, which is gesture-based and recognizes the players, will enable multiple players to form long-distance competitive leagues. The Kinect platform and SDK for researchers with its camera-eye’s view of players is already making inroads into health and fitness, especially when the commercial SDK is made available.³⁵
- **Televisions:** CES 2011 brought an explosion of Internet-enabled TVs – and of course their TV set-top boxes. DVD players, **Roku** and now **Amazon** provide streaming video-on-demand and new Internet-enabled televisions could become an access point for senior applications. As adoption of broadband grows, the TV may overtake the PC as an interactive content medium for seniors and caregiving – **GrandCare Systems** is an example of presenting senior-enabling software through a television user interface.³⁶

ADVICE TO VENDORS TODAY: MOVE FROM PRODUCTS TO SERVICES

Probably the biggest issue that keeps more of today’s technology out of the homes of seniors is the difficulty of marketing to both them (“We are not old!”) and to their afraid-to-interfere adult children, while selling through knowledgeable reseller channels AND pricing right for resale. Vendors and senior service providers can and must close that gap of awareness, offering solutions for each stage of independence (see **Figure 9**). Vendors must find:

- **The right customer – baby boomers and their roles.** But some marketers pick a target audience that shares a common role – for example, **Grandparents.com** has identified a shared role occupied by boomers as young as age 47 and built a high-traffic and compelling website. And other role-based boomer sites like **Caring.com** and **ParentGiving.com** offer aging in place vendors a ready audience of baby boomers with shared interest in caring for their aging parents.
- **The real need – a service problem solved.** Seniors and their adult children can’t begin to imagine on their own what to do with sensor networks, web cams, or set top boxes. Someone needs to tell them. Instead of offering point products out of context, vendors should fit their offerings into solution descriptions, service provider relationships, and senior support processes along the continuum of needed care. This includes a grasp of the decision points that spike interest in a product. Finding an independent living assessment on **Philips’ Lifelinesys.com** is a welcome surprise to boomers and seniors wondering if it is feasible to remain at home.³⁷

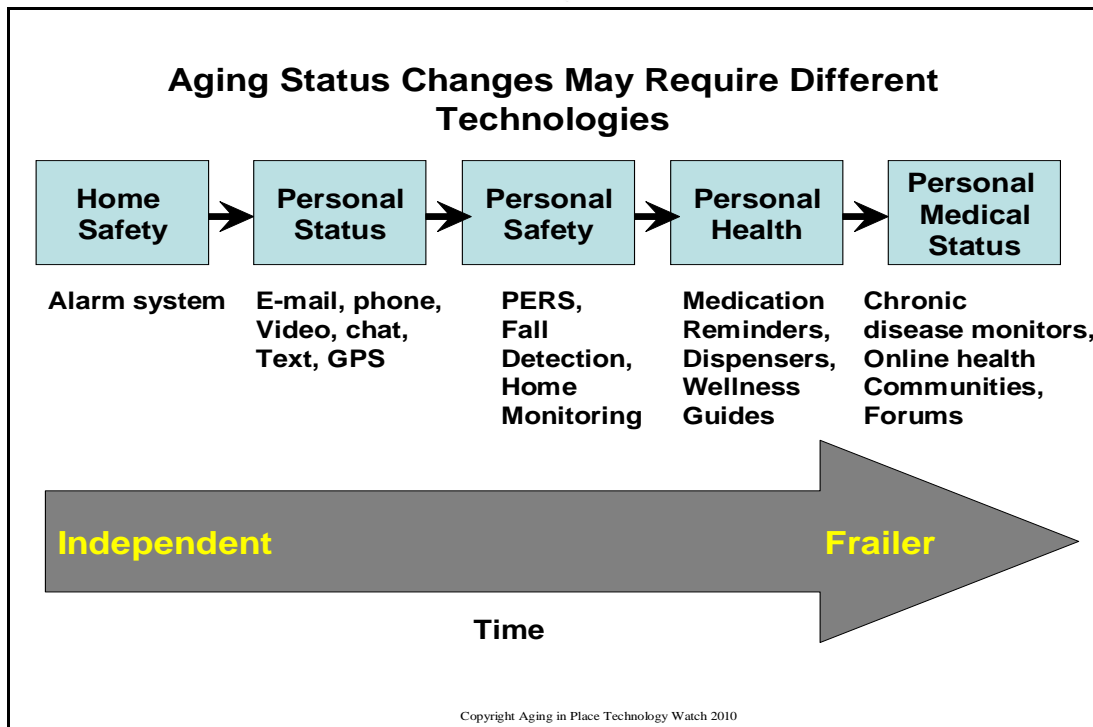


Figure 9

- **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. Channel utilization should primarily be indirect, either because of extensive reach, configuration or local service needs. For example, PERS vendors like **VRI** or **Philips** market through multiple regional service providers at local price points. Others will gravitate to a larger and branded ecosystem from insurance companies or selling devices through senior centers, home care agencies, or senior housing organizations.

Ten Steps for Vendors and the Aging in Place Technology Market

Find the channels that present products and services in the context that’s appropriate, whether it’s AARP, ASA, or Silvers Summit at CES -- an annually occurring event that focuses on boomers and seniors within this giant consumer product showcase.³⁸ In addition, 2010 saw the launch of a trade association of vendors – Aging Technology Alliance (**AgeTek.org**) – that promises to further propel the market of technology for older adults.³⁹ To those within or contemplating entry into the boomer and senior market – here are 10 steps to consider:

1. **Create a boomer-and-senior aware website.** Mention the target audience by name: “How this product can make seniors feel safer” rather than hoping prospective customers will figure it out. Make the site is friendly to those with diminished vision. Use **IN2L**’s example: provide a video of a pleased user that’s worth 1000 words.
2. **Test usefulness with the target audience.** So much of the R&D effort in technology firms and university programs fails to produce a viable product. And vendors too often jump in without confirmation that tech resonates. Consider relationships with senior centers, area agencies on aging, or health centers.



3. **Narrow scope, but broaden messaging.** Products that serve a narrow purpose can still be described within holistic context as a day-in-the-life scenario, like Margaret's. Early on, seek partners with related products or service messages to make it happen.
4. **Be wary of box obsolescence.** Avoid being part of the back-room junk pile of products-gone-by. Recognize the progressive nature of the service needs of the consumers and pre-engineer extension (the tablet version, for example) and expansion capability into the product.
5. **Give away device and sell service.** Device prices are a barrier to lucrative and long-term service to boomers and seniors. Yet many vendors have devices listed for more than \$100, beyond the price tolerance noted in survey's like AARP's.
6. **Offer the free trial.** Try with option to buy is such a time-tested strategy -- it is interesting to see how rarely it appears to be used by vendors in this market.
7. **Add related and useful value.** Offer points and advice about problems faced by prospective consumers – including links to criteria for assessing needs and services, like a link to '20 questions for long-distance caregivers' from the National Institute on Aging.⁴⁰
8. **Add the community to the product.** E-mailed customer testimonials are nice but they are inadequate to build buzz from early success. Moderated communities (or blogs with comment) can become product feedback living organisms.
9. **Monitor reputation on consumer websites.** Vendors should be wary about deteriorating service reputation by regularly checking blogs, chat rooms, and forums - - improving their responsiveness accordingly.
10. **Cultivate members of other markets early.** Be the first in your space to actively seek out continuing care communities, geriatric care managers, home renovation providers, assistive technology, and health care organizations.

HOW DOES THE AGING IN PLACE TECHNOLOGY MARKET EVOLVE?

The marketplace of products today is fragmented into a cottage industry comprised largely of startups, challenged by both lack of awareness and a difficult economy. But with its fragments assembled into an overall puzzle, this business for boomers and beyond represents a conservative \$2 billion market today.⁴¹ But potential business would be far higher if marketers could reach the 14% of boomers that have expressed interest in helping their parents. Between 2010 and 2020, based on growing boomer awareness and their own aging, this market will grow to at least \$20 billion and radically change as (see **Figure 10**):⁴²

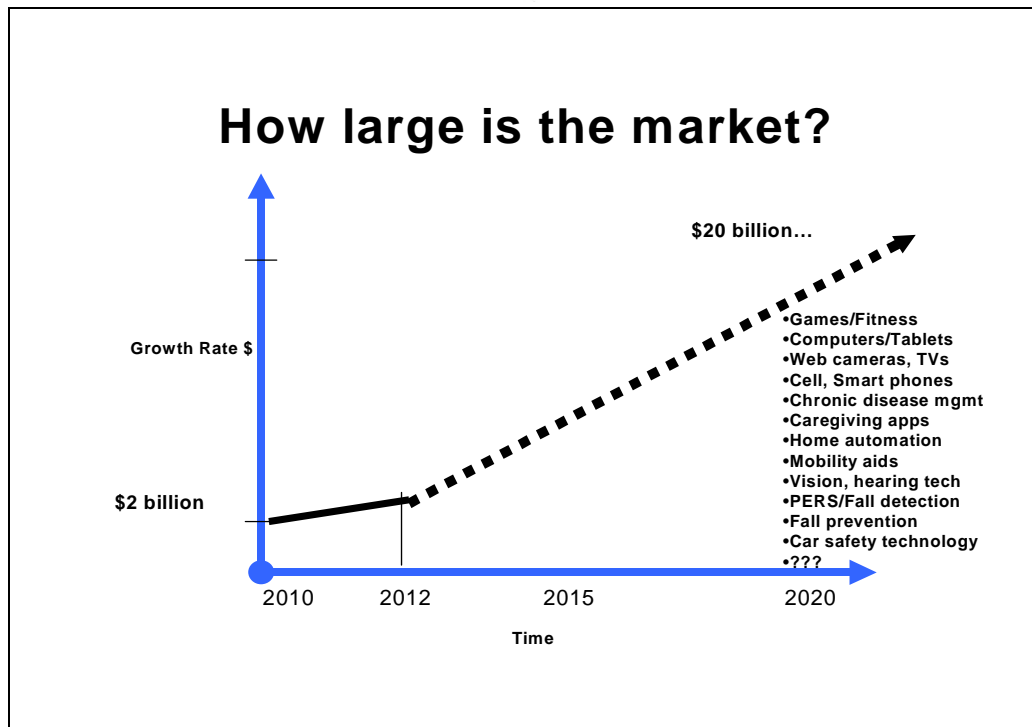


Figure 10

- 1. Role- and need-based hubs will emerge and grow.** Aging in place technologies are beginning to gravitate towards hub-and-spoke portals, so dominant in eCommerce evolution, that provide a lens into how roles (like caregiver, senior, and provider) relate to needs (like home monitoring, and medication reminders). As hub-and-spoke portals mature, they will offer concierge service for consumers to view and share information, as well as to purchase targeted products and solutions. Consider *role-based* hubs like **Grandparents.com** and **Caring.com**, and health *need-based* hubs like **DiabetesMine** and **PatientsLikeMe**. Their partner spoke vendors (like **Intel**, **Care Innovations**, **Great Call** or **HealthHero**) may advertise or even connect directly to these sites. In the future, some platform vendors may become important as hubs, like **MayoClinic**, **WebMD**, and **MedlinePlus**, for example, in healthcare, or **Google+** or **Facebook**, building on its growing boomer-turned-senior social network (see **Figure 9**).

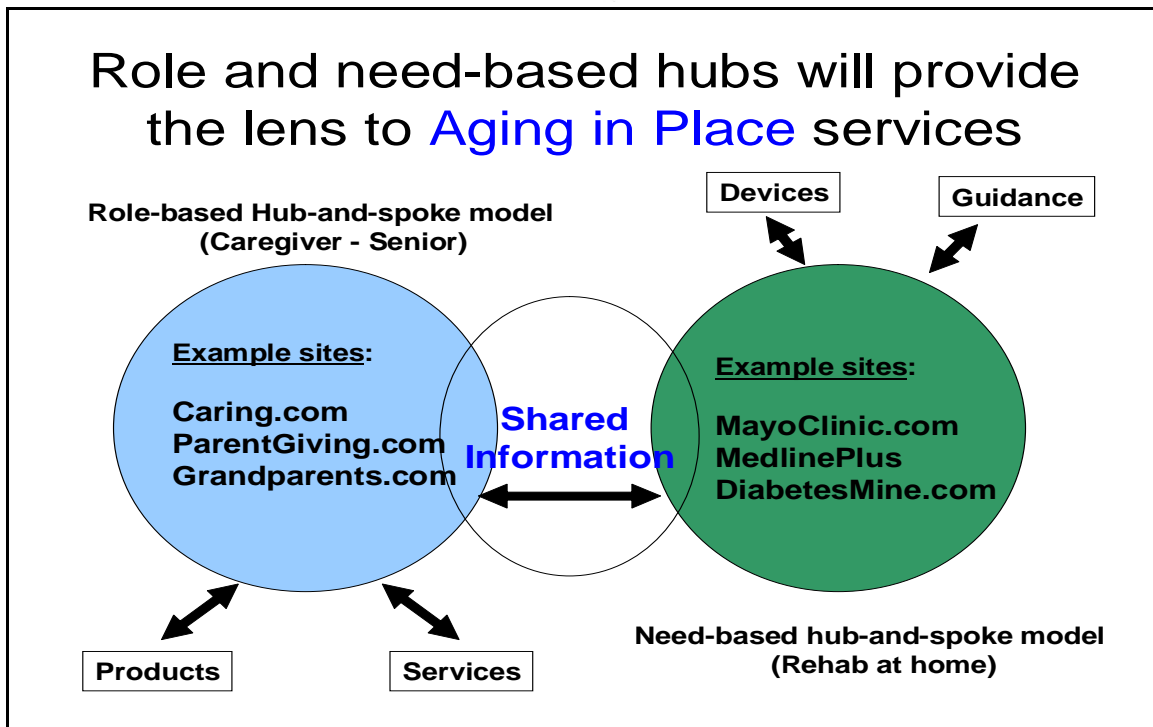
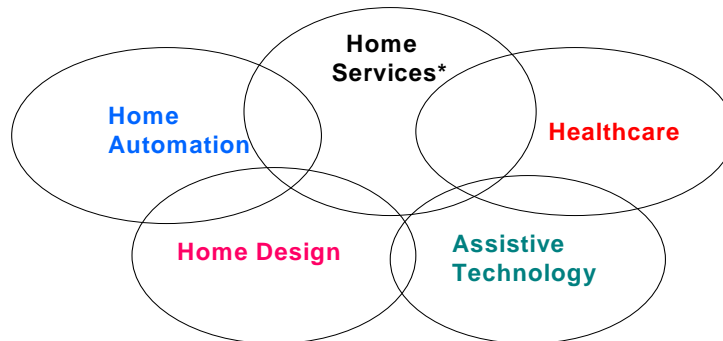


Figure 11

2. **Aging in place provider silos will overlap (home design, healthcare, services).** In the future, role or need-based hubs-and-spokes, with their caregiver- and senior-focused lenses on need, will force convergence of aging-related categories. For example, Assistive Technology (part of the healthcare market) overlaps with Healthcare – and those in that market see little link to aging services. Service-based providers – like assisted living, CCRCs, and home companion care all target the same senior, but in very different and still largely tech-free ways. And markets that should overlap don't: Home care and geriatric care management groups are becoming interested in deploying technology that could help family members know what's happening with loved ones. The home automation and custom installation market – filled with tech experts -- could be an aging in place enabler, but currently is a separate small market (see **Figure 12**).
3. **New developments and remodels will offer aging-in-place technologies.** Some new housing developers (including CCRCs and ALFs) pre-wire housing with broadband, security monitors, and motion sensors – in addition to grab bars, wide doorways, and alternative kitchen counter heights. As costs go down and housing demand restarts, other senior housing options will be standard, upgrades or even pre-packaged retrofits. Boomers will expect home networks, web cams, and voice-activated security for personal emergency response – and aging in place vendors will leverage them to build more sophisticated and connected applications. To reduce energy use, building codes will mandate temperature and humidity sensors, including automatic reset of lighting and temperature as home is entered or exited. Automatically lit pathways from bed to bath will become standard as well.



Aging in Place Market Silos Will Overlap



* Example services include:

Home care, transportation, geriatric care management, social services

Figure 12

4. Vendor standalone market entries will morph into solutions, designed for all.

Today's high product prices and one-off innovations will be replaced with integrated low-cost solutions; and the evolution of hubs (on- and off-line) will force vendors to find customers through them. Unique functionality may garner adoption by the most tech savvy seniors, but for the majority of the aging population, a consistent underlying platform that is designed for all, not simply for the elderly, will be preferred.

Professional caregivers and health providers will use smoothly connected tablet/PC-smart phone platforms to gain visibility, which will propel solution-aware vendor offerings into mainstream usage. Local integrators, drawn perhaps from senior housing, electronics dealers, or remodelers or home care, to travel the last few feet into the home.

WHAT CONSUMERS AND SUPPORT SERVICES SHOULD DO TODAY

Although this is still an early market, it is still a very useful set of products – and should be explored now by seniors and their families, caregivers, and service providers. Helping seniors and the-soon-to-be-senior be safer, connected, healthy and fulfilled is too important to await market evolution and shakeout. And market awareness pressure results in better products and services – and vice versa. It's time to:

- **Assess family along a tech literacy continuum.** Not everyone grows older in Silicon Valley -- a newspaper letter quotes a senior subscriber who plaintively noted that advertisers keep mentioning websites, not phone numbers. Even the Social Security Administration recently stopped printing statements that can be viewed online. If your family member sees the web or other tech as impenetrable, don't give up. That's why there is still a market for one-button answering machines, easy-to-use cell phones, and printing mailboxes. And providers are learning: new training of Geriatric Care Managers (GCMs) offered by the University of Florida guides prospective GCMs in the use of technology to support clients, especially long-distance caregivers, in their businesses.⁴³



- **Research technology for today's need with an eye to the future.** Family members and providers who observe that *no* technology is available to loved ones should be energized into asking: why not – where is it? Yes, you should inquire about the availability of fitness programs in an assisted living facility, but also ask about technology (like web cameras for long distance family chats or wireless networks to enable use of tablets in common areas) to improve safety or help engage family members into tighter connections to a relative, and how the facility deals with increasing frailty.
- **Find a community of interest and support.** Look online first for shared interests in advancing the use of technology and related services for boomers and seniors. Demand that nationwide and visible organizations, like AARP, WebMD or Caring.com, provide more information on recent tech-enabled innovations and solutions. Find technical support communities, local 'Geek' and 'Genius' squads that will service boomers and seniors where they live as well as online. Push cable providers to add a local 'geek squad' service to offerings for a small recurring fee. If consumers elevate their expectations, vendors and providers must listen.



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Sources

Center for Aging Services Technologies (CAST)
Continua Health Alliance
Members of AgeTek.org
AARP
National Alliance for Caregiving
Pew Research
MetLife Mature Market Institute
And many others who have provided guidance and insights over the past 2 years

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Laurie M. Orlov, a leading tech industry veteran, writer, speaker and elder care advocate, is the founder of **Aging in Place Technology Watch**, a market research firm 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 years of technology background and years as a technology industry analyst, Laurie is certified in geriatric care management from the University of Florida, and has served as a long-term care ombudsman in Florida. She is the author of other market reports, including 'Calibrated Care is Closer to Home' and a 2011 AARP report on communication and engagement tech for the 50+ market. She is also the author of **When Your Parents Need Elder Care** (Authorhouse 2006).

In her previous career, Laurie Orlov spent more than 30 years in the technology industry, including 24 years in IT and 9 years as a leading industry analyst at Forrester Research where she was often the first in the industry to identify technology trends and management strategies which have survived the test of time. She speaks regularly and delivers keynote speeches at forums, industry consortia, conferences, and symposia. She has served as an advisor to leading organizations like AARP, J&J and Philips and her blogs are featured on numerous websites about topics related to boomers and seniors. Learn more at www.ageinplacetech.com.



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⁸ Lewis, Aging: The Healthcare Challenge, 2002

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¹⁴ 27% of 65+ live alone: <http://pewsocialtrends.org/assets/pdf/752-multi-generational-families.pdf>

¹⁵ Family Caregiver Alliance (<http://www.caregiver.org/caregiver>)

¹⁶ <http://research.gallaudet.edu/Demographics/deaf-US.php>

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¹⁸ As of 2006, 38% of all hospital inpatients were individuals age 65+.

¹⁹ http://www.cms.gov/CommunityServices/20_MFP.asp

²⁰ http://assets.aarp.org/rgcenter/il/healthy_home.pdf

²¹ <http://www.census.gov/population>

²² <http://www.caregiving.org/data/04finalreport.pdf>

²³ http://www.unitedhealthgroup.com/news/rel2011/eConnected_Family_Caregiver_Study_Jan_2011.pdf

²⁴ <http://www.physicianspractice.com/blog/content/article/1462168/1933985>



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²⁶ Only 33% of those 65-73 and 9% of those 74+ go online wirelessly (smartphone or laptop).

²⁷ CAPS, National Association of Home Builders.
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³² Today 23% of seniors use the Internet at least once per day. As boomers age, however, that number will grow – 26% of today's boomers are online more than 9 hours a week and 35% of those users purchase products online at least monthly. www.forrester.com

³³

http://seattletimes.nwsourc.com/html/microsoftpri0/2014231113_mobile_world_google_ceo_says_the_phone_is_the_new.html

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³⁵ http://weblogs.baltimoresun.com/health/2010/06/kinect_for_xbox_360_adding_a_1.html

³⁶ <http://grandcare.wordpress.com/2010/07/29/grandcare-2nd-article-in-new-york-times/>

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⁴¹ 2010 market size was based on a combination of published market estimates, including the \$295 million 2010 brain fitness market (SharpBrains), \$1 billion PERS market, with \$50 million (estimate) of all privately held home monitoring companies and related security firms. PCs, software, cell phones, smartphones, tablets, and video games, make up the remainder.

⁴² The PERS market has been forecast at an 11.6% CAGR through 2012,
www.marketresearchworld.net

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Aging in Place 2011 Technology Categories and Vendors (Example vendors)

Today's market combines general-purpose technology vendors with a boomer/senior offering and small specialist vendors solving more narrowly defined problems. For inclusion as a technology to facilitate aging in place, the vendor meets two of these criteria (these are examples, not an exhaustive list):

- a) Incorporate messaging to and about boomers and/or seniors.
- b) Boomers and/or seniors have broadly adopted the product.
- c) Is available across the US, not just in a single region.
- d) Be available free or for a fee, not only via insurance reimbursement.

| Category | Sub-category | Purpose | Platform | Contact | Cost/ mo plus Device |
|--|------------------|-----------------------------------|-----------------|--------------------------------|--------------------------------------|
| <i>Communication and Engagement</i> | | | | | <i>Example Price range</i> |
| Celery 2-way (no computer) email | E-mail | Printing e-mail | Appliance/ Fax | mycelery.com | \$13.98 or \$139/hr plus fax machine |
| Presto Printing Mailbox | E-mail | Printing e-mail | Landline | Presto.com | \$12.50/mo plus \$149.99 |
| The Valet Easy-install router | Wireless router | Wireless networking | Internet | TheValet.com/ | \$100 |
| Just5 Simple Feature phone | Cell phone | Long battery life | Cellular phone | Amazon.com | \$63 and up |
| Senior Value TracFone Pre-paid No contract | Cell phone | Multiple phones | Cellular phone | TracFone.com | \$9.99 and up |
| Great Call (multiple) No contract | Cell phone | Easy-to-use cell phone + services | Cellular phone | GreatCall.com/ | \$14.99/mo plus \$99.00 |
| ClarityLife C900 | Cell phone | Amplified 20db cell phone | Cellular phone | clarityproducts.com /products/ | GSM carrier plus \$82.95 |
| Hamilton CapTel | Multiple devices | Captioned telephone services | Free service | HamiltonCaptel.com | 800i for \$99 |
| iPad | Tablet | 9.7 inch multi- touch | Tablet | Amazon.com | \$491.99 |
| Kindle Fire | Tablet | 7-inch multi-touch | Tablet/ eReader | Amazon.com | \$199 |
| Telikin Touch Screen Computer | Touch Computer | Easy to use computer | PC | Telikin.com | \$699.99 |

| <i>Communication and Engagement</i> | | | | | <i>Example Price range</i> |
|--|--------------------------------|-------------------------------------|---------------------------------|---|--|
| Acer Aspire One | Netbook | 2.76 pounds | PC | Target.com | \$248.99 & up |
| InTouchLink | PC Ease of Use Software | Monthly or yearly | Senior PC Software | IntTouchLink.com | \$13.00/mo after initial free trial |
| Connected Living | PC Ease of Use Software | Internet | Senior PC Software | ConnectedLiving.com | \$9.99/mo |
| LifeShare | PC Ease of Use Software | Pre-config'd software | Senior PC software | LifeShare.com | \$30/month |
| PointerWare | PC Ease of Use Software | Pre-config'd software | Senior PC Software | Pointerware.com | \$8.00/mo |
| Coro Health Therapeutic media service | Alzheimer's Care | Individual music therapy | Service | Corohealth.com | From \$10/mo per user |
| LifeLedger | Caregiver support | Internet | Caregiver, GCM | Lifeledger.com | \$9.95/mo |
| eCare Diary | Caregiver support | Internet | Family Caregiver | eCarediary.com | Funded by advertising |
| Caring.com | Caregiver portal | Support to family caregivers | Web portal, directory | Caring.com | Funded by fees, advertising |
| Care.com | Caregiver portal | Support to caregivers | Portal, directory | Care.com | Funded by fees, advertising |
| SilverPlanet | Portal plus consulting | Boomer portal | Resources, directory | SilverPlanet.com | Consulting fee |
| Caregiver.com | Portal | Support caregivers | Resources, Events, media | Caregiver.com | Funded by advertising |
| Ankota Family Connect | Homecare software | Info for families | Suupport to families | Ankota.com/ankota-family-connect | Free to families, health svc fees |

| <i>Home Safety and Security</i> | | | | | <i>Example price range</i> |
|--|-----------------------------------|----------------------------|------------------------------|------------------------------|---------------------------------------|
| ActiveCarePAL | Mobile PERS/Fall Detection | Consumer, Caregiver | Wearable detect fall | Activecare.com | \$59/mo |
| VRI | PERS, Meds, vital signs | Consumer, Caregiver | Devices | Monitoringcare.com | \$29.95/mo |
| LifeStation | PERS | Consumer, caregiver | PERS | Lifestation.com | \$26.95/mo |
| Independa | Smart reminders | Consumer | Monitor Platform | Independa.com | \$19.95/mo |
| AframeDigital | Monitor | Remote monitoring | Watch plus sensors | Aframedigital.com | \$69/mo plus \$499 |
| GrandCare | Monitor | Remote Monitoring | Appliance | grandcare.com | \$50/mo plus \$2000 |
| Healthsense™ eNeighbor™ | Home monitor | Resident Monitoring | Wifi sensors | Healthsense.com | \$60/mo plus \$1300 |
| WellAWARE | Monitor | Resident Monitoring | Wifi sensor s | Wellaware systems.com | \$125/mo plus \$250 activation |
| BeClose | Monitor | Consumer | Wifi sensors | Beclose.com | \$79/mo plus \$299 |
| Sonamba | Monitor | Consumer | Cellular | Sonamba.com | \$39/mo plus \$549.99 |
| Halo Monitoring | Wearable fall detection | Resident Monitoring | Wearable detect fall | Halomonitoring.com | Range \$40-60/mo plus \$99 |
| Philips Lifeline with AutoAlert | PERS with fall detection | Consumer, caregiver | PERS with fall detect | Lifelinesys.com | Range \$35 - \$59.00/mo |
| Mobile Help (Medical Mobile Monitoring) | Mobile PERS | Consumer | PERS with GPS | Mobilehelpsys.com | \$36.95/mo based on annual |
| Nuvelinc vSOS | Smartphone PERS | Consumer | IPhone, Android | Nuvelinc.com | \$9.99/mo |

| <i>Health and Wellness</i> | | | | | <i>Example price range</i> |
|--|--|--|-----------------------------|---------------------------|---------------------------------------|
| Dakim Brain Fitness | Cognitive fitness | Brain fitness program | PC-installed | Dakim.com | \$249 |
| MindFit | Cognitive fitness | Consumer or senior center – Brain exercises | Web or CD | e-mindfitness.com | \$139.00 or \$149.00 |
| PositScience | Cognitive fitness | Brain fitness programs | PC-installed program | Positscience.com | \$395-495 |
| WiiFit | Exercise | Consumer: Balance board, fitness games | Wii | Amazon.com, others | \$90.00 plus \$272.99 Wii |
| Wii Sports Pack | Exercise | Senior center: Wii Bowling, Tennis, other | Wii | Amazon.com, others | \$42.99 |
| My Fitness Coach | Exercise | Consumer: Ability to chart progress over | Wii | Amazon.com, others | \$31.20 |
| Microsoft Kinect | Exercise | Gesture, camera-based | Kinect | Amazon.com | \$149.99 |
| Philips Lifeline with Philips Medication Dispensing Service | Medication dispenser and reminder | Consumer: cup-based dispensing | Appliance | Lifelinesys.com | \$75/mo plus \$85 installation |
| MedSignals | Medication management | Consumer, 4 drugs, instructions | Phone | Medsignals.com | \$15.00/mo |
| OnTimeRx | Medication reminder | SMS, e-mail, phone-based | Web or software | Ontimerx.com | \$9.95/mo and up |
| MedMinder | Medication dispenser | Consumer: dispensing | Appliance | MedMinder.com | \$39/month |

| <i>Learning and Contribution</i> | | | | | <i>Example price range</i> |
|---|-------------------------------|---|------------------|-------------------------------------|----------------------------------|
| MyGrandchild.com | Games with grandkids | Play games, read online via network meetings | Internet | Mygrandchild.com | \$4.95/meeting |
| Readeo Video Book Reading Service | Books with grandkids | Read books, see grandchildren | Internet | Readeo.com | \$9.99/mo |
| SeniorJournal.com | Social networking | Boomers and seniors | Internet | Seniorjournal.com | None |
| Amazon Kindle | eBook Reader | Download books in adjustable reading formats | Device | Amazon.com | 9.99/book \$139-379 |
| Barnes & Noble Nook | eBook Reader | Download books, color | Device | Barnesandnoble.com | \$9.99/book \$149-249 |
| LifeBio | Legacy | Produce a book based on template | Internet | Lifebio.com | \$39.95 |
| Ancestry.com | Legacy | Create family tree | Internet | Ancestry.com | \$20.95 |
| SeniorNet.org | Education and Learning | Technology training and access | Internet | Seniornet.org | \$40.00/yr |
| Dorot University Without Walls | Education and Learning | Telephone-based learning | Telephone | Dorotusa.org | \$15/course |
| RetiredBrains.com | Education and Learning | Directory of online courses | Internet | Retiredbrains.com | None |
| Senior Center Without Walls (California) | Education and Learning | Telephone-based courses | Internet | Seniorcenterwithoutwalls.org | None |