

AGELAB Life Tomorrow

Living and Aging at Home with the Internet of Things

Conference Synthesis Report

Massachusetts Institute of Technology AgeLab

April 6, 2016



Massachusetts
Institute of
Technology

agelab.mit.edu



SUMMARY

The MIT AgeLab held a conference on April 6, 2016, to discuss how smart-home technologies may change how aging consumers will live, provide and receive care, and connect with others.

Attendees included representatives from the MIT AgeLab and organizations across industries, including finance, health, information technology, logistics, and the non-profit sector.

The conference began with four presentations by thought leaders specializing in the Internet of Things (IoT). Next, the AgeLab brought in a panel of consumers aged 45 and over to share their thoughts and perceptions on smart-home technology.

Attendees discussed the panel's responses and the challenges inherent in producing and marketing smart-home technology for aging adults and their adult children.

Finally, attendees were invited to imagine possible new ecosystems of home devices and services. What is the future of home technology for the aging population? What visions will business and thought leaders apply as they build a dynamic technology marketplace for life tomorrow?



1. Welcome & Introductions

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Joseph Coughlin, PhD, founder/director of the MIT AgeLab, framed the event in the context of a coming brave, new, older world. The AgeLab's slogan, "Life Tomorrow," he said, reflects the idea that the aging of society will affect all aspects of life as more of us live longer, birth rates continue to decline, and baby boomers grow older. Key to the AgeLab's research approach are the terms "learn, explore, create," which represent the Lab's guiding priorities of making aging fun while focusing on practical applications, particularly as built by businesses for their consumers.

Organizations at the conference roundtable included some of those best able to put into practice revolutionary ideas regarding old age and the Internet of Things. These included, but were not limited to: AARP, Amazon, Bank of America Merrill Lynch, Colgate-Palmolive, CVS Health, Healthways, IBM, Liberty Mutual, MassMutual, Philips, Prudential, and The Hartford.



COLGATE-PALMOLIVE



Presentations by Four Leaders in IoT

In the first session of the day, four thought leaders gave presentations on the Internet of Things. Presenters included David Rose, MIT Media Lab lecturer and author of *Enchanted Objects*, a near-futurist book about what pervasive smart-home technology might look like; IBM's Kathleen Delgado, who works on technological solutions for people with disabilities; Amazon's Paul O'Shaughnessy, who works in product development and marketing; and the AgeLab's Chaiwoo Lee, a researcher focused on aging adults and the Internet of Things.



David Rose, MIT

In his lecture, “Enchanted Objects,” Rose painted a picture of life in which web-enabled technology, not limited to a mere handful of multi-purpose devices, atomizes and becomes incorporated in everyday objects. In a video tour of an Enchanted-Object-filled home, he showed how a smart umbrella could predict the weather, or a cabinet could be devoted to Skype, and then he talked about how such innovations change the relationship of technology to everyday life. Some key points that came up in his talk include:

- > In an ideal world, Internet-connected objects are a seamless part of our lives, working, to our eyes, like magic. With Rose's smart medicine bottle, the user activates it by opening the cap—an interaction she would have performed even with a “dumb” medicine bottle!
- > One of Rose's projects, named Ditto, is an attempt to label and classify 1.8 billion photos on the Internet. It has the potential to revolutionize the ability of devices to recognize the objects we interact with every day.
- > People want to buy aspirational products, not “necessary” products, which presents a challenge for healthcare.
- > Joe Coughlin: The problem of being “so profoundly rational” in product design is that fun matters. Rationality in excess becomes cold, sad, and even creepy. “Help, I've fallen and I can't get up!” is a memorable slogan, but not particularly inviting. Perhaps solutions like Enchanted Objects present a better way.

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Kathleen Delgado, IBM

Delgado spoke on technology solutions for people with disabilities. In her talk, she frequently referred to a video, titled “Uninvited Guests,” which presented a humorous picture of an older adult circumventing various monitoring technologies his well-meaning children had put in place to keep him healthy. The point of the video, she said, was that the Internet of Things can become intrusive and irritating. “Pervasive” may be, in fact, insufferable and so there is a need to forge “purposeful connections” between consumers and their technology. Next, Delgado showed a short documentary about Bolzano, a town in Italy that has begun working with IBM to place IoT hardware into elderly residents’ homes, so social services can monitor their health and respond rapidly. Key takeaways:

- > One resident, an older woman named Zita, says that IBM’s unobtrusive monitoring tech gives her a feeling of independence.
- > In a sense, fostering independence is among the most valuable things a company can provide its consumers. As one of the older adults in the documentary said, “A rich person is someone who can do anything.”



There is a need to forge “purposeful connections” between consumers and their technology.



Paul O'Shaughnessy, Amazon

O'Shaughnessy spoke on Amazon's goal of giving people their time back. One problem posed by today's technological ubiquity is "app fatigue": owning lots of apps but not using them, and feeling overwhelmed by multitudinous platforms and interfaces. The logical successor to this problem, with the advent of the IoT, will be "thing fatigue," which promises to be even more exhausting. To fight this, Amazon is using a few methods:

- > Using only a voice interface, Amazon's Alexa allows the coordination of numerous devices across the home, including non-Amazon devices.
- > Amazon provides an Amazon Web Services engine for smaller companies to develop products independently.
- > "We are on Day 1. We have just scratched the surface," O'Shaughnessy said. A significant gap still exists between the ideas of developers and the ability and willingness of consumers to embrace those ideas.



Chaiwoo Lee, MIT AgeLab

Lee discussed what the IoT will mean for the aging population. Older adults spend much of their time alone, she said. Their challenges include vulnerability, limited opportunities for social interaction, health and functional declines, and limited independence. One of the challenges in developing useful technologies for the aging population is avoiding the development of technology for technology's sake. Are smart-home devices actually pinpointing and solving problems, Lee wondered, or are they being built simply because the technology is readily available? Her insights included:

- > "Usability" should be defined as not merely about utility, but whether it feels natural to the user.
 - Users should feel empowered. The feeling of "being watched" is undesirable; the user should feel in control.
 - Key words here include: reliability, privacy, security.
- > Developers should consider whether the motivation to adopt a new technology comes from older adults or their adult children.
 - Where is the marketplace for IoT devices for older adults? Where do older people and caregivers go to learn about and buy these products?



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3. Internet of Things at Home: Interactive Consumer Panel

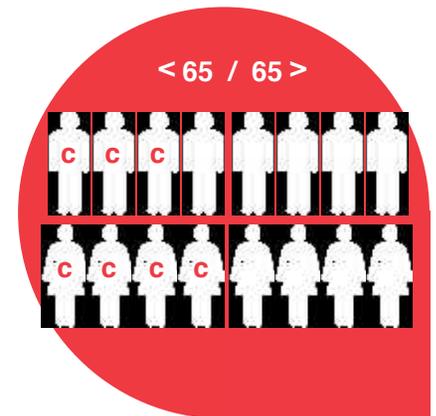
For the day's second session, the MIT AgeLab introduced a panel of consumers aged 45 and over, some of whom provided care to older family members, to delve into thoughts and perceptions regarding smart-home technology. While viewing a video showcasing various smart-home products, the panel used handheld Perception Analyzer dials to record their reactions. The responses of the panel, in graphical form, were shown on a projection screen in real time. Afterwards, the panel answered questions from conference attendees regarding their responses.

The consumer panel included:

- > 7 caregivers; 9 non-caregivers.
- > 8 male; 8 female.
- > 8 younger than 65; 8 older than 65

Preliminary questions & key response phrases:

- > What worries you about getting older?
 - *Dementia. Planning ahead for future problems. Money. Dependence. The dreaded nursing home. Being a burden.*
- > How do you feel about the Internet of things?
 - *I found the smart home great... after a while I found it annoying. It's here to stay. What's it for? Fear of privacy loss. Somebody listening in. I like things manual.*



3. Internet of Things at Home: Interactive Consumer Panel

The Perception Analyzer handheld dial system allowed the panel to rate, on a scale from 0 to 100, how much they wanted the product onscreen. Rough average scores for each product were:



Following the video, AgeLab researchers probed the panel’s reactions to the technologies in greater detail.

- > The sleep tracker created the fear of feeling guilty, like going to the dentist after neglecting one’s flossing. “Sleep should be something natural.”
- > Uncertainty about the effectiveness of many products was a common refrain. One panelist wondered about the smart fridge: “How will it keep track of leftovers, items that don’t have bar codes on them?”
- > Jibo: “It gives me the heebie-jeebies.” “I could see people dressing it up.”
- > Fears about privacy came up, combined with suspicion of companies and institutions: “You’re losing control of yourself.”
- > A generational divide on the caregiver monitoring technology appeared. Older adults felt negatively about it; adult children thought it could be useful. One older panelist wondered if companies had thought about the importance of “dignity” for older adults.
- > Many wondered whether these products were strictly necessary.
- > What do these things cost? There was widespread uncertainty as to what the “right price” for such products would be.

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4. Follow-up to Panel: If We Build It, Will They Come?

For the final session of the day, the conference discussed the implications of the consumer panel's responses. How do aging consumers feel about smart-home technology? Where are the gaps between consumers and developers, and how can these gaps be addressed and narrowed?

- > Among the consumer panel, there was significant pushback to many new technologies, suggesting that knee-jerk rejection of smart-home technologies in the general public would present a very real challenge to companies.
- > To the extent that older panelists seemed to evince greater receptivity to technologies, conference-goers wondered if younger adults are more “fiercely protective” of their privacy, while older respondents might be more willing to use smart-home tech that allowed them to preserve independence.
- > Female panelists appeared more receptive to both Jibo and Amazon Echo than men. Some speculated that, like the old stereotype, men don't want to ask for directions—from humans and robots alike.
- > Customers “don't know what they want,” the famous Steve Jobs quote, applies to the older tech market, although going against market research can lead to high levels of risk.
 - Key quote: “Henry Ford's true innovation was creating the driver.”
- > “Every day is different.” How can a piece of hardware adapt to the changeability and messiness of human life?
- > Several conference members wondered: What about people in lower income brackets? What about non-white people? The panel did not represent these voices.
 - In many Latino families, for example, aging parents are more likely to live with their adult children, which would call for different or fewer IoT technologies than families in which older adults live alone.
- > Research questions that came up included:
 - How does willingness to adopt tech change over time? How about in relation to fears of cognitive decline?
 - What are the specific frustrations of aging adults?
 - What might be the role of government regulation in smart-home tech?
 - What are perceptions of sexuality among aging adults?
 - Can more granularity be applied to the term “older adult”?

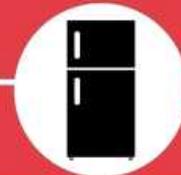


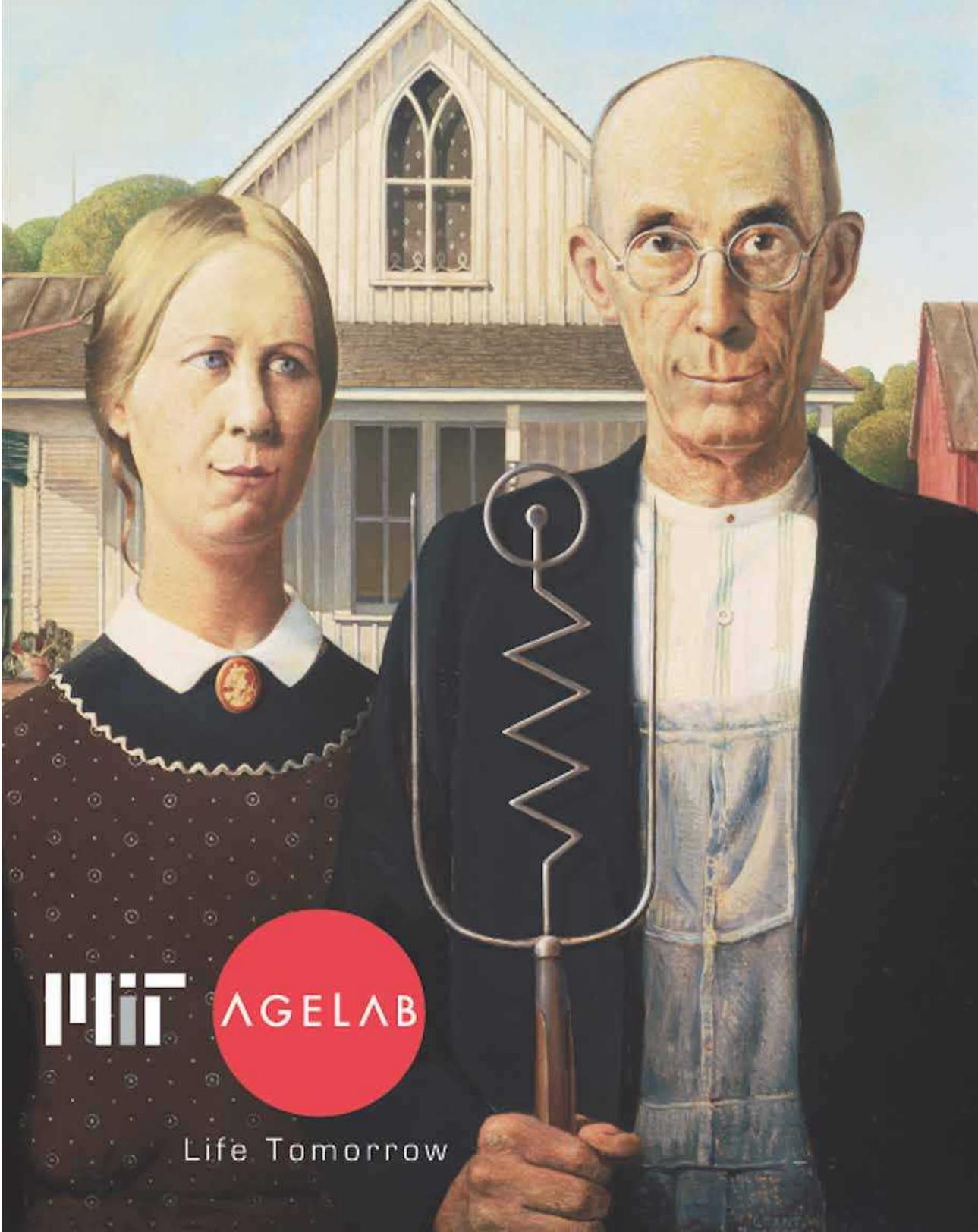
“Henry Ford's true innovation was creating the driver.”

5. Envisioning New Ecosystems of Home Devices and Services

To wrap up, the conference looked toward the future. How can businesses and organizations building and marketing IoT solutions for an aging society surmount the inherent challenges? Which organization(s) will find a multigenerational angle? Which will be able to make products that excite and delight their consumers? One essential point that came up is that some of the best technologies for older adults are not explicitly intended just for them. The iPad, perhaps one of the most successful pieces of hardware for older adults ever designed, has never explicitly been marketed toward older users. In some cases the best way to find the older market is by marketing more broadly.

Joe Coughlin's final remarks: "When America has a problem, America goes to the mall." But there is no mall for the future of aging technology. There is no marketplace. There are few trusted institutions, and although there is an ocean of start-ups, each building one device at a time, it may not be enough to create a sea change in how aging takes place. The medicalization of the entire field of aging represents a failure to imagine a better old age. To inspire older adults to work with technologies designed to make their lives better, a sense of "fun" isn't necessary just for unserious products. Rather, it's a baseline requirement, needed for any product to be part of life tomorrow.





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