

Personal robots help reduce isolation,



boost engagement during the pandemic and beyond



How temi is making life easier and helping senior living residents stay connected during challenging times

by Marilyn Larkin, MA

On February 25, 2020, shortly before the COVID-19 pandemic became a global phenomenon, Irish consultancy Research and Markets produced a report, “Social Robots: Emotional Connection and Task Engagements,” which covers the potential of this emerging market.¹ Personal services, social companionship, medical support and

entertainment are all part of this market, according to the report.

Many active-aging organizations have moved quickly to take advantage of the social connection and functionality of social robots for older adults and staff. For Maplewood Senior Living, headquartered in Westport, Connecticut, the pandemic accelerated their introduction of “temi—The Personal Robot”—and expanded their use in some unexpected ways (see “Temi in action in senior living” on page 40 for details). A good deal of research, much of it recent, has demonstrated the benefits



The temi robot is designed to protect senior living constituents with hands-free temperature readings. Image courtesy of temi

of social robots, from “animal” therapy to entertainment and engagement, to helping with functional tasks² (turn to page 39 for a sidebar of selected research).

To give *Journal on Active Aging*[®] readers a sense of temi and its deployment in senior living, I spoke with Yaron Yoels, temi’s chief marketing officer, about the robot’s capabilities and the company’s commitment to continually improving its product in response to feedback from older-adult users. Maplewood’s Gina Saunders, corporate director of memory care and programming, discusses that organization’s experience with temi in the sidebar on page 40.

ML: Yaron, why was temi developed, and how do you think it differs from other social robot technologies?

YY: The robot first came to life when temi Cofounder and Chairman Yossi Wolf was visiting his grandmother four years ago. He noticed that she had trouble operating

her smartphone and performing everyday tasks around the house. Wolf had worked in the robotics industry for more than 15 years, first as vice president, robotics, at ODF Optonics (2003–2009) and then as CEO of Roboteam Defense (2009–2016). So, he asked himself, “How can I use my knowledge of robotics to help in this situation?” The temi robot is the product of this experience.

When developing the robot, we knew several things were needed:

- a high-definition tablet that displayed video, and that individuals could interact with via touch
- a speech/voice recognition capability, since this trend would grow moving into the future (One of the many consequences of the pandemic is that voice is an absolute necessity to maximize senior living residents’ accessibility to pandemic-related information and health-and-wellness programming, and to minimize the risk of infection while still remaining socially connected.)
- the ability to autonomously navigate within an indoor environment using affordable sensor technologies
- a platform that third-party developers could use to implement applications and integrate technologies that aligned the robot with specific use cases
- the ability to support telepresence video calls, where someone could remotely control the robot’s orientation and movement

When we were conceptualizing all this, there was no robotic solution that could accomplish all of these tasks, and so we saw it as a tremendous opportunity.

ML: What do you think makes temi robots particularly useful in older-adult settings?

YY: In these settings, we work in partnership with the technology company, Connected Living, to accomplish three

main objectives: *protection, connection* and *engagement*.

Protect. In an effort to best protect all senior living constituents (residents, staff and guests), we provide hands-free temperature readings. That is, temi measures the temperature of anyone entering a community after asking screening questions such as “Have you recently traveled out of the country?” or “Are you currently experiencing any COVID-19 symptoms?”

Also, through a “clean patrol” function, the robot can autonomously navigate on a loop of two or more preconfigured locations while spraying a cleansing solution that helps rid nearby surfaces and the air of potential contaminants.

Connect. Using its telepresence feature, temi is able to connect constituents to each other from anywhere in the world. All the user needs to do is give a contact the right permissions, and that person can call into the robot. When the user answers, the caller appears on the screen, as though he or she were right there, and also has the ability to operate temi remotely. We offer three types of access permissions:

- guest, which means the user/owner must answer to give the caller access to temi
- member, which means the caller can drop in at will—the user/owner does not have answer

Continued on page 38

Resources

Connected Living
www.connectedliving.com

Maplewood Senior Living
www.maplewoodseniorliving.com

temi—The Personal Robot
www.robotemi.com

Personal robots help reduce isolation, boost engagement during the pandemic and beyond *Continued from page 37*



One temi objective is to engage users. For example, the robot can implement video events such as virtual classes and family video calls. Image courtesy of temi

- admin, which means the person who owns the robot and who can access it

In addition, using the Connected Living application provided with temi, residents can access pertinent information about their community—for example, dining menus, calendar contents, activity/community information, video resources and bulletin alerts. Organizations can set up these connectivity features using Connected Living's Enterprise Content Management System, available for a relatively low startup cost and a monthly service fee.

Engage. The Alexa voice assistant is fully integrated with temi, and so the robot can serve as a companion or even as another endpoint [a device, such as a laptop, connected to a network] to implement video or audio events and resources. Examples include family video visits, telemedicine visits and entertainers providing virtual events, including classes, lectures and concerts.

ML: *What kind of infrastructure and knowledge do communities need to implement temi?*

YY: From a technical standpoint, all that's needed are a high-speed wireless network connection and the temi phone application. Connected Living walks people through the installation process and how to integrate the temi robot into daily community operations, using various techniques to "socialize" the robot and introduce it into the community as a friendly helper.

ML: *What challenges have you addressed across communities and organizations during implementation?*

YY: Temi can perform a wide range of tasks within communities; therefore, one challenge we've had is determining exactly how temi can assist in the specific daily operations of a community. But at the same time, this has proven to be an excit-

ing problem-solving process that enables us to personalize our offerings to best fit the needs of individual communities. Another major challenge that we consistently come across is inconsistencies in network connectivity throughout communities. In order to operate to the best of its ability, temi must remain on a consistent network connection.

ML: *What outcomes have you seen, anecdotally and/or via formal feedback?*

YY: Outcomes differ, depending on the type of community—independent living, assisted living, dementia care—and the community's infrastructure. Overall, we have seen a tremendous demand for temi's "protecting" abilities, which are the temperature capture and cleaning abilities noted earlier. Also, we have seen a growing demand for temi to serve as a telehealth solution, allowing physicians to provide checkups for residents at a distance. And, we're particularly gratified to see older adults who reside in assisted living and skilled care settings interacting with family members, in a comfortable, natural way, through a robot!

ML: *What's ahead for temi?*

YY: We recently released the temi Center, a web platform that allows community staff to manage a fleet of robots or a single robot in various ways, responding to real-time feedback. Administrators can use special mapping abilities to do things like build virtual walls that keep the robot from entering certain areas of a home or community. The temi center platform also enables customizations, such as specific greetings for different parts of the community. In addition, administrators can set up automated sales tours to provide potential customers with a more holistic understanding of a community prior to move in. And this can all be done by individuals with no technical or coding background.

We believe robots are here to stay because they can increase staff efficiency (do more

with less, task automation) and amplify resident and family engagement. The key to adoption—and success—is creating clear, realistic, attainable and measurable goals to guide the robot’s role in the community setting.

New possibilities

For active-aging communities and other organizations that serve older adults, technology adoption may begin a journey of growth. Yoels agrees that technology partners and active-aging counterparts can create a “virtuous circle,” with each party spurring the other on to identify new possibilities for technology use and fresh ways to customize technology to meet client needs.


Narrower objectives may evolve quickly, as the pandemic has shown. Consider that only months after debuting in Maplewood communities, temi robots now fetch or deliver packages for residents. The robots also stream workouts to overflow participants when instructor-led classes are full.

Social robots such as temi are making life easier and helping residents stay connected during these challenging times.



A fleet of temi robots awaits deployment in Maplewood’s communities in 2020. Image courtesy of Maplewood Senior Living

There’s every reason to think that as staff and residents grow increasingly comfortable with these devices over time, robots will play an ongoing role in sustaining active-aging communities in the “next normal.”

Marilynn Larkin, MA, is an award-winning medical writer and editor, an ACE-certified personal trainer and group fitness instructor, the editor of ICAA’s Research Review, and a contributing editor and technology columnist for the Journal on Active Aging. 

References

1. Research and Markets. (2020). Social Robots: Emotional Connection and Task Engagements. <https://www.researchandmarkets.com/reports/4991298/social-robots-emotional-connection-and-task>
2. Onyeulo, E. B., & Gandhi, V. (2020). What makes a social robot good at interacting with humans? *Information*, 11(1), 43. <https://doi.org/10.3390/info11010043>

Continued with the sidebar on page 40

Selected research on social robots

Allaban, A. A., Wang, M., & Padir, T. (2020). A systematic review of robotics research in support of in-home care for older adults. *Information*, 11(2), 75. <https://doi.org/10.3390/info11020075>

Baisch, S., Kolling, T., Schall, A., et al. (2017). Acceptance of social robots by elder people: Does psychosocial functioning matter? *International Journal of Social Robotics*, 9(2), 293–307. <https://doi.org/10.1007/s12369-016-0392-5>

Bemelmans, R., Gelderblom, G. J., Jonker, P., & de Witte, L. (2011). The potential of socially assistive robotics in care for elderly, a systematic review. In: Lamers, M. H., & Verbeek, F. J. (eds.). Human-Robot Personal Relationships. HRPR 2010. *Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering*, 59, 88–89. https://doi.org/10.1007/978-3-642-19385-9_11

Broekens, J., Heerink, M., & Rosendal, H. (2009). Assistive social robots in elderly care: A review. *Gerontechnology*, 8(2), 94–103. <https://journal.gerontechnology.org/currentIssueContent.aspx?aid=986>

Chen, T. L., Bhattacharjee, T., Beer, J. M., et al. (2017). Older adults’ acceptance of a robot for partner dance-based exercise. *PLoS ONE*, 12(10), e0182736. <https://doi.org/10.1371/journal.pone.0182736>

Karunaratne, D., Morales, Y., Nomura, T., et al. (2019). Will older adults accept a humanoid robot as a walking partner? *International Journal of Social Robotics*, 11(2), 343–358. <https://doi.org/10.1007/s12369-018-0503-6>

Klein, B., Gaedt, L., & Cook, G. (2013). Emotional robots. Principles and experiences with Paro in Denmark, Germany and the UK. *GeroPsych*, 26(2), 88–99. <https://doi.org/10.1024/1662-9647/a000085>

Melson, G. F., Peter, J. K. H., Beck, A., & Friedman, B. (2009). Robotic pets in human lives: Implications for the human-animal bond and for human relationships with personified technologies. *Journal of Social Issues*, 65(3), 545–567. <https://doi.org/10.1111/j.1540-4560.2009.01613.x>

Wachsmuth, I. (2018). Robots like me: Challenges and ethical issues in aged care. *Frontiers in Psychology*, 9, 432. <https://doi.org/10.3389/fpsyg.2018.00432>

Yu, R., Hui, E., Lee, J., et al. (2015). Use of a therapeutic, socially assistive pet robot (PARO) in improving mood and stimulating social interaction and communication for people with dementia: Study protocol for a randomized controlled trial. *JMIR Research Protocols*, 4(2), e45. <https://doi.org/10.2196/resprot.4189>

Personal robots help reduce isolation, boost engagement during the pandemic and beyond *Continued from page 39*

Temi in action in senior living

by Gina Saunders

Maplewood Senior Living operates 15 independent living, assisted living, memory care, and skilled nursing and rehabilitation communities across Connecticut, Ohio and Massachusetts—with communities set to open in late 2020 in New Jersey and New York. We were planning to launch temi at our soon-to-open Manhattan community, both for educational and entertainment purposes, and as an addition to our existing technology offerings, so residents could learn a new skill. However, when the pandemic struck and social distancing was required, we decided to expedite the robots to all of our locations to help residents cope and provide them with as much comfort as possible. Residents were understandably disappointed by the visitor restrictions, the closure of common spaces such as the dining rooms, and the need for telehealth, when appropriate, as opposed to in-person health consultations.

We've been very gratified by our experiences so far. While the robots do not replace human interaction, they certainly have been helping our residents feel more connected. They're particularly helpful in lifting the residents' spirits. We see our residents dance to the music temi plays, laugh along with its jokes, and utilize the video chat function to interact with family members who were temporarily not able to visit.

Facilitating connections

More recently, we have lessened restrictions on visitors, and social distancing

policies have begun to relax. Everyone is still required to wear masks and stand six feet apart; however, visitors are now allowed by appointment and some small group activities can take place. And we still have a role for temi.

Our communal areas are not open to full capacity, so temi continues to keep our residents connected with family via video chat, as well as with physicians and our internal care team. Temi delivers mail and small items that may have been ordered online or sent to them by family, taking them directly to the residents' rooms. The robot can also deliver snacks from the kitchen or small items from the front desk, program staff, etc. The residents are learning how to train the robots to do other tasks, such as going to the dining room and grabbing a snack for them, or telling a joke. One resident in Ohio trained the robot to be his gardening assistant—asking temi in real-time for information on how to plant asparagus and learning about the growth cycle.


Temi also helps with our community programming. While some group activities have returned with restricted numbers and other pandemic protocols, the robot can stream a socially distanced workout class. If an in-person workout class is filled, temi can be in a separate room with a handful of socially distant residents who could use the video workout as a supplement to a live instructor or stream a Broadway show while an associate leads another small group activity in a different area.

Getting to know temi

We spent about a week at each community providing training classes for associates

and residents on how to use temi. The challenges were mainly based on the fact that this was a new technology for everyone, including staff. We needed to understand the commands and requirements to activate temi successfully—for example, we learned that individuals need to be within a certain distance for temi to properly hear and respond to commands. Users also need to address temi by name to get the robot's attention, similar to the way one interacts with voice-based technology such as Siri or Alexa.

Once staff learned these skills, they were able to pass them along to residents. The amount of time it took each community to fully adapt to and understand temi varied by location, but overall, the launch was smooth once the team learned what to do.

Our residents were excited to interact with temi and jumped at the chance to learn the required skills, even though they had no previous experience with such devices. Every community has at least one temi and residents can interact with the robot as much or as little as they want. We have not heard any negative feedback from any residents. Temi has been a huge success at Maplewood, and the robots are here to stay. We will be adding more to our communities over time. 

Gina Saunders is the corporate director of memory care and programming at Maplewood Senior Living, headquartered in Westport, Connecticut.