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Tapping technology for elder care

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GAINESVILLE, Fla. -- Imagine a house so smart it allows seniors to live independently at home even as they grow frail and forgetful.

Forget to turn off the stove? A sensor alerts the occupant via a computerized cell phone. Can't remember if the doors are locked? The phone will check and report back. Unsure how long to heat a frozen entree? A "smart microwave" recognizes the bar code on the package and automatically determines cooking time.

From the outside, the brand new three-bedroom house just west of the University of Florida campus looks like any other in the wooded Oak Hammock subdivision. But inside, the guts are unlike any other in Florida, and possibly the country. Researchers say it could become a model for the future.

Never before, they say, has a house been able to connect appliances and devices to a computer network that can communicate with the home's occupants and caregivers on the outside.

"We think whole retirement communities can be built this way," said Sumi Helal, director of technology development for UF's Rehabilitation Engineering Research Center on Technology for Successful Aging. "The technology is there now. We're just putting it all together in a way that could be available and affordable to the public within the next few decades."

The university got the keys to the 2,400-square-foot prototype house on Sept. 6 and will spend about two months adding the smart technology and appliances. Gainesville, Fla.-area seniors will live in it for stints over a 10-year period to test the system. Researchers also will use part of the house to study how the technology is working.

Minette Hendler, 76, a former Plantation, Fla., resident, will become the first guinea pig after the home is dedicated in November.

A retired paralegal and 20-year Gainesville resident, Hendler says she is not afraid.

"I have a computer and I do e-mail," said Hendler. "I'm game for this."

An eye on Boomers

Some experts say they think smart-home technology could hold back the wave of 78 million Baby Boomers expected to flood nursing homes and assisted-living facilities in the near future. The first of the Boomers, born between 1946 and 1964, turn 65 in seven years.

Having grown up with cell phones and hand-held computers, Boomers are generally comfortable with gadgets and more likely to embrace the concept of depending on their houses to help them.

"Study after study we do tells us that 70 or 80 percent of the people want to stay where they are as they get older," said Elinor Ginzler, manager of independent living and long-term care for the AARP in Washington, D.C.

The prototype home cost $200,000 to build and contains $80,000 worth of technology, some of it donations from companies, said William Mann, director of the UF center and chairman of the occupational therapy department.

With a computerized mobile phone and flat-screen monitors in each room, the technology can alert the owner to a water leak, identify visitors at the front door and announce mail deliveries. A voice command can turn on the lights, TV and stereo. The system enables the owner to share a meal with grandchildren via television.

The house also can remind its occupant to take medicine and scan the prescription bottle to make sure it's the right one. It keeps an inventory of pills and can dial up the pharmacy to reorder a prescription.

It also keeps tabs on infirmities. If an owner usually spends 15 minutes in the bathroom, but an hour or more has passed and the sensor detects no motion, it notifies a caregiver.

Ease of access

The house includes a kitchen without a refrigerator. Instead, refrigerated and freezer drawers are placed around the room so that preparing a meal is easier. The dishwasher is designed so that dirty dishes on a bottom rack are washed and moved to the top for easy access. Instead of a separate washer and dryer, one machine does both tasks, saving the step of transferring washed clothes to the dryer.

Helal and Mann hope to eventually put their smart-home concept in a box that homeowners could buy and install themselves. But for that to catch on, they say, builders need to put the technology into new and remodeled homes.

"If someone is going to be supported in their home, that's far less expensive than a nursing home," said Mann.

Companies such as Microsoft envision a huge market for computer-based automated systems and are racing to develop ones that are cheap and easy to install and use.

Right now, wireless smart-home technology is not affordable for most people, especially seniors on fixed incomes.

But costs would likely decrease over time.

Monitoring help

The smart-home concept has been around the past two decades, but only in recent years have researchers turned their attention to devising systems that let people age in place.

While UF's program focuses on helping people with physical or cognitive disabilities, the University of Virginia's Medical Automation Research Center is developing systems that monitor a person's health. Researchers there are testing a system in 23 apartments that measures an elderly person's pulse and breathing rates in bed and sends reports to researchers.

In the real world, the data would go to a caregiver or a company assigned to monitor the person.

The researchers envision a day when homes take care of themselves and their aging occupants.