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Lab Rat: Talking doors and opinionated couches

By **Phil Harvey**
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There's a gatekeeper in every office, keeping the boss's life free from strangers.

In Ted Selker's Context-Aware Computing Lab at the Massachusetts Institute of Technology (MIT), there's a different kind of gatekeeper that handles impromptu visitors. But it doesn't sit behind a desk; it lives inside and around the makeshift threshold in the middle of Mr. Selker's lab.

You can sit on a sofa that's just a few feet away and watch someone else negotiate their way through the "smart" doorway. While you're doing that, the sofa will greet you and might start giving you pointers on how to relax.

Whether the resulting gadget is a computerized threshold or furniture that talks, Mr. Selker uses a combination of homemade sensors and off-the-shelf technology to teach students what's possible when devices and rooms are "aware" of their users and inhabitants. Context-aware computing, he says, happens when computing devices have a sense of who we are, where we are, what we're doing, and what we have done.

THE TRULY SMART HOUSE

The gadgets and devices in Mr. Selker's lab are in various states of almost-doneness. Everything's a work in progress. But with every idea represented here by retrofitted household objects, exposed wiring, and duct tape, there's a story of what could be possible once an idea's rough edges are smoothed out and cutting-edge

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technology drops in price a bit.

Take the threshold, for example. Within its wooden frame are microphones; under the doormat are sensors to tell the computer inside when someone's there.

"Hi, welcome to Ted Selker's office," says the animated character on the flat LCD screen that's attached to the door. "What's your name?"

When you say your name, the computer inside checks Ted's schedule in Microsoft Outlook to see if you have an appointment. It also checks to see whether you're one of his students, one of his friends, or a sleepy reporter who thinks it's way too early in the morning to be talking to a door.

If you don't have an appointment, it'll help you schedule one. If Ted's in a meeting, it'll ask if it's an emergency or assess whether you're so important you can interrupt whatever Ted's doing.

NICK'S ALL RIGHT
"If it's [MIT Media Lab cofounder] Nicholas Negroponte, you let him in," Mr. Selker says to the door (or was he talking to me?).

In short, the threshold shows us that a combination of speech-recognition technology and sensors placed around the doorway can manage relationships inside an office. Add a few more technologies and the threshold might be able to tell who you are by what IP-enabled gadgets you're carrying as you approach it.

If you're carrying Ted Selker's phone and you're about his height, the door would swing open rather than playing 20 questions.

The talking couch has similar possibilities. With sensors under its cushions, the couch greets new arrivals and may encourage them to relax if they sit leaning forward for too long.

The possibilities here, though, go beyond a cutesy parlor trick. What if you're carrying a wireless, Net-connected personal digital assistant (PDA) and the couch sees you have an appointment coming up in a half-hour? The couch might check your schedule and offer to remind you when it's time for you to leave.

It might also recognize that it's time for your favorite show and turn it on before you get a chance to reach for the remote. Been working out extra hard? The couch might someday sense you've lost a pound or two

recently and compliment you for the efforts or offer to order a celebratory pizza.

BUT WAIT!

To some, the prototypes here may sound a bit too Sharper Image. Indeed, when the wrong kinds of devices and technologies are converged, it becomes the stuff of late-night infomercials. Remember the "Inside-the-Shell Electric Egg Scrambler?"

But what powers this lab isn't the desire to tantalize Ron "Ronco" Popeil's in-studio audience. Instead, Mr. Selker and his students are trying to show how adding the right kind of information, to the right device, at the right time can make people's lives less crowded with technology and more productive.

With the right kinds of sensors in place at a museum, Mr. Selker says, a talking exhibit would tell you just what you needed to know about it. In other words, the room would "understand" the difference between a 3-year-old and a 30-year-old and adjust its presentation accordingly.

Above our heads in the lab, there are almost as many projectors hanging around as there are lights. "We're going to be thinking more and more about what is and isn't appropriate lighting," Mr. Selker says. "Wouldn't it be nice if the ceiling saw where you were and made sure that there was adequate lighting for you to read the paper, but without shining light directly in your eyes?"

TECHNOLOGY FOR SLEEPYHEADS

And, if you think Mr. Selker leaves his ideas at the office, you haven't seen the multimedia bed. There you lay down and look up to a ceiling that's a giant computer screen, where, with a wireless mouse -- or, someday, eye-tracking technology -- you can run sunset screen savers, check e-mail, surf the Web, or drift off to sleep listening to music. Don't worry -- the bed will sense when you're asleep and turn off the volume.

"If you were a quadriplegic, this wouldn't be a bad thing," Mr. Selker says, as he looks up at a video image of a starlit night sky.

But like any other research lab, the Context-Aware Computing Lab is chock-full of ideas that tickle the imagination and those that sound unsafe at any speed.

"We're going to put a bicycle inside a car so you can lean into corners," Mr. Selker says enthusiastically.

"You'll get the feel of riding a bike, but you'd be going 80 miles an hour on the highway."

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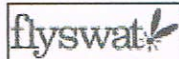MERRILL LYNCH DIRECT: ml.com/direct
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