

Technology

Technology



It's Time to Smash the Remote

- ▶ Samsung, LG, and others are racing to bring voice control to the TV set
- ▶ "The minute someone comes along with an 'app store' for TV, it will... transform the experience"

Before he died on Oct. 5, Steve Jobs left clues that he was working on a new product that would revolutionize how we interact with our TVs. "It will have the simplest user interface you could imagine," he said to biographer Walter Isaacson, and will eliminate the collections of remote controls that litter living rooms. After years of struggling with the Apple TV set-top box, which was never a huge success, "I finally cracked it," he said.

No one knows for sure what "it" is, and Isaacson isn't saying. But many tech executives agree that an **Apple TV** set is likely to make use of humankind's most natural interface: the voice. Already, millions of Apple customers are talking to their new iPhone 4S, thanks to a program called Siri that tries to provide an answer to questions like, "How's the weather today?" Whether the rumors are true that Apple is planning to release

a TV set by 2013, Siri-like voice recognition is headed for the living room. **Microsoft** is already there, via its Xbox 360 game console, and **Comcast, Samsung Electronics, LG,** and **Sharp** are working on voice-enabled features for TV sets, set-top boxes, and related products. Mike Thompson, senior vice-president at **Nuance Communications**, the world's largest supplier of voice recognition technology, says "a wave" of device makers will ship products that understand voice commands next year.

It's easy to see the appeal. Few would be upset if, instead of figuring

Any new TV interface "would be better than what we have now," says design consultant Jakob Nielsen

out which one of three remotes to use, viewers could sit on the couch and say, "Record the next episode of *Modern Family*." And while a growing percentage of new TVs connect to the Internet, many customers are put off by overly complex controls or on-screen keyboards that require the user to type by moving a cursor at an excruciatingly slow pace, says Jakob Nielsen, a product usability expert and co-founder of design consultancy Nielsen Norman Group. "Anything would be better than what we have now," he says. "We can only go up from here."

Microsoft has the early lead thanks to Kinect, an Xbox peripheral with cameras and motion sensors for hands-free gaming. Kinect also has sensitive microphones. After waking up the system by saying "Xbox," subscribers to Microsoft's \$60-a-year

Xbox LIVE service can search for shows, movies, and games by speaking to Microsoft's Bing search engine. "You get a lot of claims saying, 'We're about to transform TV,'" says Ross Honey, general manager of Xbox LIVE entertainment and advertising for Microsoft. "We already have."

Most consumers' first opportunity to talk to their TVs—and have them listen—will be through voice-enabled apps for their smartphone or tablet. More than 3 million Comcast subscribers have downloaded an app that turns their smartphone into a remote control for the company's Xfinity broadband service. Comcast is looking at adding voice-control features to the app, says spokeswoman Jennifer Khoury. Samsung and Sharp are developing similar apps of their own, according to people familiar with their plans. This may well have been the approach Jobs had in mind. According to one former Apple manager who asked to remain anonymous because he was not authorized to speak publicly, Jobs saw little reason for a stand-alone remote when iPhones and iPads can do the job better.

Others are looking to fix rather than eliminate the remote. Nuance's Thompson says TV, DVD, and set-top box makers are all working on models that look more like iPhones, some with touchscreens rather than that gaggle of unused buttons. Some of the prototypes are designed around a single prominent button that activates a microphone, he says. Cost will be a challenge, since such a device would need a microphone and Wi-Fi antenna instead of the infrared sensors now commonly used. Industry politics will also be an issue. Since having every electronic box within earshot respond at once would be a nightmare, equipment makers need to agree on which device runs the show.

The best approach of all, says design expert Nielsen, is to have no remote at all. Nuance is researching ways to embed microphones around the living room, like so many home-theater speakers—the better to discern words, says Thompson. And TV makers are looking into building mics right into TVs. Piper Jaffray analyst Gene Munster expects such devices from Apple in 2013, but others may be on the market by then. Nuance's Thompson estimates

that 5 percent of TVs could have built-in voice control by Christmas 2012.

Dave Grannan, chief executive officer of voice software maker **Vlingo**, expects many technologies to be integrated eventually. In his dream scenario, he'll be able to tell his TV to pull up his Netflix queue. Using Kinect-style motion control, he could then air-swipe through his library. Thanks to eye-tracking software in the TV or set-top box, he would simply look at the movie he wants to watch and say, "Play that." "The combination of voice, gesture, and eye tracking is the future," says Grannan. He says Vlingo will announce its first voice recognition product for TV at the International Consumer Electronics Show that begins on Jan. 10.

Major hurdles remain. "The living room is tough," says Dag Kittlaus, who co-founded Siri, the voice control technology startup bought by Apple in 2010. Kittlaus left Apple in

Quoted

"[It took a] very unfortunate bounce that sent the ball skyward."
 —Alameda County (Calif.) Sheriff's Office spokesman J.D. Nelson, on a cannonball fired by the *MythBusters* TV crew that went astray, crashed through a home, and landed in a parked van. No one was hurt.



Show hosts—and geek world celebs—Jamie Hyneman and Adam Savage

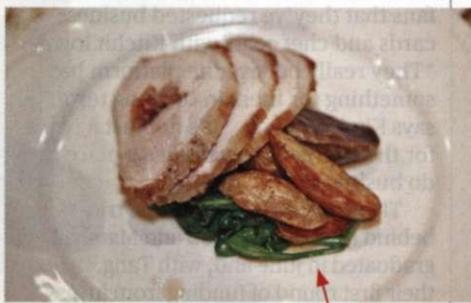


standards for speech-enabled devices but has yet to announce partners.

The biggest challenge, however, is simply making the software smarter. Kinect users are limited to a handful of commands, and plenty of iPhone 4S owners have already tired of hearing Siri tell them, "I don't understand." That means the heaviest lifting still needs to be done by the technology companies that have worked for decades on artificial intelligence. **SRI International**, the Silicon Valley research lab that created the Siri technology before spinning it off as a separate company, is working on software to allow for far more advanced computer-human dialogue. There's even a project to enable technology to discern a person's mood by picking up on verbal cues. "Siri is the beginning of the story, or near the beginning of the story," says SRI Vice-President Norman Winarsky, an early champion of Siri. "There's much more to come." —*Peter Burrows and Cliff Edwards*

The bottom line Smartphone apps may be the first way to control TVs with voice commands, and 5 percent of TVs may have voice recognition by 2013.

HOSTESS



student George Tang, explored creating a smart shopping-list website. Then it hit them: "Chefs have the answers to all these questions," says Marshall. "We can bring chefs to these people."

Kitchit opened for business this fall, offering more than 20 chefs in the San Francisco Bay area for personalized dinners, cocktail parties, and cooking lessons. The cost typically runs from \$25 a person for large events with basic menus to as much as \$200 a person for six-course meals including linens, flower arrangements, and wine pairings. Over the next year the company plans to expand to New York, Los Angeles, Washington, Chicago, and Boston.

"Catering businesses are scattered around the Internet, and you have no idea if the service is going to be good or bad," says Karla Gallardo, a happy customer in San Francisco who used Kitchit to host an Argentine-style *asada* dinner for her boyfriend's birthday in November. The site let her browse the user reviews and background of the chef she chose, Danny Guerrini, and message him to make sure he could prepare the meal without using pork. "Everything is customized for you," says Gallardo.

Chefs say Kitchit takes the extra work out of finding and coordinating with customers. "My least favorite part [of being a chef] is getting clients and talking yourself up," says Kirsten Goldberg, a veteran of Mario Batali's Babbo restaurant in New York. She's booked nine Kitchit dinners and cooking lessons in the past two months, and Goldberg says the Web service has let her "just focus on the food and the cooking." The site also handles billing and provides chefs with a calendar to keep track of engagements. Some chefs are such big

E-Commerce

No, Padma Lakshmi Will Not Come to Your Home

- ▶ Startup Kitchit matches picky party planners with chefs and caterers
- ▶ Chefs say it lets them "just focus on the food and the cooking"

Stanford alumnus Christopher Kim wanted to go big for his tailgate party before the annual football game against archrival University of California at Berkeley in November. He hired a private chef, who arrived at Stanford's campus on game day with baked beans, potato salad, corn bread, and a 56-pound pig he'd smoked for six hours the night before. The feast was a hit with the 52 Cardinal fans who showed up, each contributing about \$25. "Most of the people didn't go into the game," says Kim. "The food was the attraction."

Kim found the chef and placed the unusual order for a tailgate pig roast

on **Kitchit**, a new website that connects picky diners and party planners with cooks. Visitors to the site choose from a selection of chefs in their area, ranging from freelance spice-rub specialists to master chefs at Michelin star-rated restaurants, and provide the location, date, number of guests, and how much they would like to pay. A chef who agrees to the details does the shopping and prep work and shows up ready to cook, serve, and clean. Kitchit takes a cut of 10 percent to 20 percent of the price.

The idea for Kitchit came from three Stanford students in 2010 as they entered their last year at school. "We wanted to help people with dinner parties in the home and take the pain out of finding what you are going to cook, how much time you have, and what the best sources for all these different ingredients are," says Brendan Marshall, who, along with fellow MBA student Ian Ferguson and computer science grad

THE MENU

- Kampachi Crudo with radishes, new oil, and pink salt
- Classic spaghetti alla Carbonara
- Fig-stuffed roast pork loin with Russian red fingerlings
- Cheese course
- Pineapple upside-down cake, vanilla ice cream

PHOTOGRAPHS BY DOW

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fans that they've requested business cards and chefcoats with Kitchit logos. "They really believe the platform has something for them in the long term," says Kitchit's Tang. "It's not just a place for them to get business, it's a place to do business."

These are early days for the trio behind Kitchit. Ferguson and Marshall graduated in June and, with Tang, raised their first round of funding from investors including **Crosslink Capital** and **500 Startups** in August. But the site is picking up steam. "We have gotten unsolicited requests from chefs in geographies you wouldn't expect," such as Louisville and Charlotte, says Ferguson. Will Kitchit accommodate bespoke meals in such far-flung locales? "Once we're at scale, there's no reason we couldn't," he says. —*Douglas MacMillan*

The bottom line Kitchit plans to bring its chef-matching service to New York, Los Angeles, and other cities in 2012.

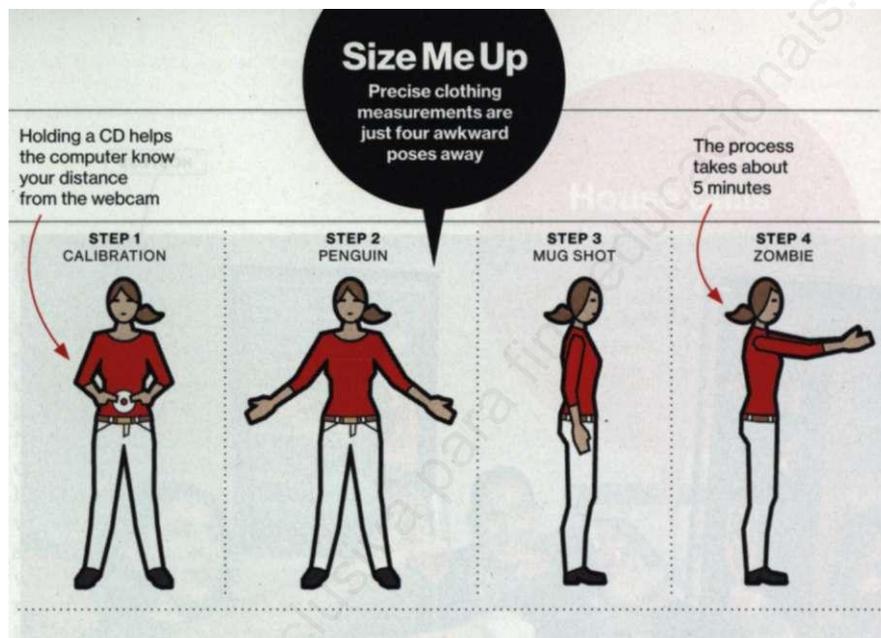
Fashion

Size 0? Your Webcam Knows the Truth

▶ A Berlin startup has tech to take your measurements via computer

▶ "Fit isn't a matter of what ... fits you, but what you like"

For Asaf Moses, the most embarrassing part about buying clothing online is wearing ill-fitting purchases out of a sense of guilt. "You're not satisfied, and you don't look right, but you try and make the clothes work because you paid for them," says the 29-year-old Israeli, who estimates only 1 in 10 online purchases fit the way he expects. A few years ago, Moses piled his hallway full of failed acquisitions, free for the taking. "My friends left looking stylish and happy," he says. "But I felt very frustrated."



Moses, who graduated from the economics program at Germany's Humboldt University of Berlin in 2009, decided something needed to be done. Together with his graduate school buddy Sebastian Schulze, he founded **UPcloud**, a Berlin startup that allows shoppers to take precise body measurements using a webcam. "The measurements are on average more accurate than those taken by a professional tailor," says Moses, who plans to launch the service early next year.

UPcloud—the name is a mashup of the words "upload" and "clothes"—is part of a wave of companies trying to help online shoppers find flattering clothes without using a dressing room. Potentially it's an enormous market. U.S. online retail sales last year increased by 12.6 percent, and the industry is expected to grow to \$279 billion by 2015 from \$176 billion in 2010, according to Forrester Research. Customer reluctance, however, remains an impediment. Of those who don't buy clothes online, 72 percent say they're afraid they won't get a good fit, according to market research firm YouGov. About 20 percent of clothing bought online is returned, usually because of size issues.

In pursuit of the perfect fit, some companies such as eyewear manufacturer Warby Parker allow customers to upload photos and virtually try on

merchandise. **Clothes Horse**, a New York startup, assists users by correlating sizing across retailers. "If you're shopping for Bonobos and you know your favorite size in J.Crew, you can give us that information and we'll tell you what Bonobos size will be best," says Clothes Horse co-founder David Whittemore. "We're solving for the fact that a size 6 is not a size 6 across brands."

UPcloud's solution is more high-tech. To use the software, would-be shoppers dress in tight dark clothing and pose for four photos in front of a white wall, holding a CD. The standard size of the CD allows UPcloud's photo recognition software to determine the person's distance from the webcam and make calculations accordingly. One problem: Normal webcam software isn't sophisticated enough to distinguish between subtle differences in shading. "Much of the Western world has lighter skin than me, and the majority of walls are also light," says Moses. UPcloud uses image-analysis algorithms developed for the military and semiconductor industries by the Israeli company Imagu, which traded its technology for a quarter of UPcloud's shares. Imagu analyzes images at the subpixel level, making it more precise than standard object recognition software. UPcloud has raised €200,000 (\$268,000), half from the German government.

To tailor the software, the

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The editors talk about 5 minutes

14-person startup collected body statistics from 500 Berliners. “One advantage of Berlin is that you have a lot of people who aren’t rich and need to make money,” says Schulze, 24, who took charge of the data collection. The company paid subjects €20 an hour to get measured using UPcloud’s algorithm, a 3D scanner, and a professional tailor, then calibrated the software until the difference between the three was negligible. In *Bloomberg Businessweek*’s own test, the results were spot-on: UPcloud’s measurements were within 1.5 centimeters of a professional tailor’s.

The next step is striking deals with major brands. Users will discover UPcloud through retailers’ websites, where they’ll be able to click a button, go through the measurement process, and then receive sizing recommendations. They’ll be able to apply their profiles across all brands that use UPcloud. A handful of companies have signed on, including **The North Face**, which will begin testing the software before the end of the year. “No one else in the world is doing what UPcloud is doing,” says Greg Pulsifier, general manager of e-commerce at the outdoor apparel brand. The North Face plans to use the software to help customers buy online and also to find out if the company’s sizing models need to be adjusted. Both companies stress they don’t keep the webcam pictures, which are deleted after generating measurements.

Some industry insiders are skeptical. “Fit isn’t a matter of what objectively fits you but what you like and are comfortable in,” says retail analyst Sucharita Mulpuru of Forrester Research. “[UPcloud] doesn’t tell you how an item looks on someone—nothing does yet.” Moses counters that UPcloud could be combined with virtual fitting-room technology from companies such as Fits.me to provide effective representations.

The startup plans to charge e-tailors a few cents each time a shopper uses UPcloud measurements and is also cooperating with companies that specialize in custom-fit clothing ordered online. “For them, it’s the perfect solution,” says Schulze. “Normally, people have to measure themselves.”

Moses and Schulze hope to eventually expand their service to measuring

feet as well. Moses says he once used EBay to buy a pair of the same Nikes worn by George Costanza, a character from *Seinfeld*, one of his favorite sitcoms. They were so small they gave him leg pains. “The doctor told me to stop wearing them,” he says.

—Caroline Winter

The bottom line Retailers including The North Face plan to use UPcloud’s webcam measurements to make shoppers comfortable buying online.

Mobile

A Souped-Up Engine For Gamers on the Go

▶ OnLive’s service enables high-end gameplay on low-powered devices

▶ Kids could get further addicted, “so there’s good and bad to this”

To date, mobile gaming has been dominated by titles such as *Angry Birds*, where players perform a few simple tasks like firing a slingshot in a two-dimensional landscape. A couple of publishers are pushing the boundaries with simplified versions of console thrillers, such as **Electronic Arts**’s *Dragon Age Legends*. But those games remain limited because smartphones and tablets lack the robust graphics chips that power top-end consoles such as the Xbox 360 and PlayStation 3.

Gamers now have an option for playing high-end titles on their underpowered tablets and smartphones. Silicon Valley startup **OnLive** already runs a cloud gaming service, letting people play games on their TVs without an expensive console. All the heavy-duty graphics processing happens in OnLive’s data centers, which transmit the results over the Internet. Starting on Dec. 8, OnLive began offering the same service for mobile devices. People with iPhones, iPads, Android devices, and **Amazon.com**’s Kindle Fire will be able to play

full-fledged console games over Wi-Fi and 3G/4G wireless networks. “I just had my kids in the back of the car on the way to Laguna Beach playing their games,” says Steve Perlman, the chief executive officer of OnLive. “We got to the beach where there are whales popping out now and again, and they said, ‘Just a minute, Dad.’ So there’s good and bad to this.”

With OnLive Mobile, people will download an app and then connect to the OnLive service. The games stream out of the company’s data centers, where a variety of crafty compression techniques are applied to squeeze the information through wireless pipes. OnLive sells a wireless controller that connects to mobile devices, letting people play as many as 150 games the same way they do on an Xbox or PlayStation. The company also has a USB adapter that lets gamers link four controllers and their audio headsets to the same device.

An additional 20 games have been refashioned for touchscreens, with more titles expected next year. **Rockstar Games**, for instance, developed a special version of its hit *L.A. Noire* console game just for the OnLive Mobile service. Gamers play a detective in 1940s Los Angeles and use their fingers to guide the Philip Marlowe-like character while solving crimes, driving cars, shooting at bad guys, and ransacking homes. The mobile version includes the original’s Hollywood blockbuster-quality scenes, in



L.A. Noire got a makeover for the touchscreen

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which animated actors move the plot ahead. "For the life of me, I can't remember a goddamn thing," says one bloodied witness as he's grilled by detectives. It's the first mobile game to feature the type of cinematic experience that's now de rigueur on consoles and powerful PCs.

L.A. Noire will cost about \$50—an unheard-of price in app stores where most games go for a couple dollars. As Perlman concedes, "It remains to be seen" if people will adjust their mobile buying habits. Games will be sold à la carte, on a rental basis, and through OnLive's \$9.99-a-month subscription service that's like **Netflix** for games. Perlman notes that OnLive subscribers who currently connect the service to their TVs will be able to play a game on their mobile device, pause it, and then pick up the action when they return to the set in the living room.

OnLive's mobile service requires a good connection, so it will struggle at congested coffee shops and anywhere people fight over bandwidth. Michael Pachter, an analyst at Wedbush Securities who covers the gaming market, notes that this may remove some of the luster from OnLive's latest venture, and that most gamers like to play on the big screen at home. "Still, there are parts to games where you have to gather stuff, and people will do that on a small screen on a bus or train and not care," he says. OnLive, whose investors include **AT&T**, **HTC**, and **BT Group**, has worked with carriers and device makers to make sure its compression techniques work well on wireless networks.

The biggest achievement of the OnLive Mobile service may be that it reinforces in people's minds just how far cloud gaming has come, Pachter says. The next time **Microsoft** or **Sony** releases new consoles, consumers might think twice about paying for the pricey hardware. "OnLive has come out with this stuff way before the next-generation consoles arrive as a proof of concept," Pachter says. "If OnLive continues to advance the state of technology the way they have, they will give people a reason not to buy consoles."
—Ashlee Vance

The bottom line Cloud gaming service OnLive is now available on mobile devices and may cause some gamers to skip the next generation of consoles.

Innovator Pat Hanrahan

Applying the Pixar Magic To Spreadsheets



If you were to draw a Venn diagram with "data scientist" in one circle and "Academy Award winner" in the other, there's probably only one person who fits in the overlapping area: Stanford University professor Pat Hanrahan.

The computer scientist is a graphics expert and former Pixar engineer who has spent much of his career designing software to make movie special effects and animations more realistic. These days he's spending less time with Sharon Stone and Jennifer Garner (the actresses who presented his two Oscars) and more with business analysts at Zynga, Wal-Mart Stores, and eBay. Those are just a few of the companies that have fallen for Tableau software, created by the Seattle start-up of the same name co-founded in 2003 by Hanrahan. **It's a kind of high-powered, highly visual Excel.** Tableau integrates with a company's databases or spreadsheets and lets anyone easily turn drab columns of numbers into interactive maps and graphs—no programming skills necessary. In effect, it's taking business analytics mainstream. "We let any user ask questions of their data by a simple drag and drop interface," Hanrahan, 56, says.

Today more than 7,000 organizations including government agencies, insurers,

and universities use Tableau, and that number has grown 40 percent in the last year. "I've never seen people get this excited about data," says Ted Corbett, director of knowledge management at Seattle Children's Hospital, where 150 staffers use Tableau for such tasks as scheduling operating rooms and clinic space. In the past year the company released an iPad app and service for media websites. Revenue is on track to nearly double, to \$65 million, according to Tableau.

In high school, Hanrahan says he "was pretty bored in class." In his free time he did his own chemistry experiments and taught himself to program. At the University of Wisconsin at Madison, he earned perfect grades in his nuclear engineering major, then stuck around for a PhD in biophysics. "I was looking for something more complicated than physics," Hanrahan says. "I really liked biology, there was less known about it." He was introduced to computer graphics by his roommate, and for his thesis created software that modeled the nervous system of a nematode.

A few years after graduation, Hanrahan became one of the first few dozen employees at Pixar Animation Studios, where he was the chief architect of the RenderMan software, which makes it easy to add skin, light reflections, fur, and other textures to objects in computer images. The software is now routinely used in Hollywood, and it earned him his first Oscar in 1993 for technical achievement. The second Oscar, in 2004, was for a new technique to render skin and other materials.

Hanrahan went on to teach at Princeton University, then Stanford, where he decided to take graphics into new realms—including business analytics. "I thought there were applications for graphics beyond entertainment," he says. "I love *Star Wars* and all that, but I really am a scientist." **B** —Olga Kharif

Education ▶ Studied biophysics because physics alone was too easy

Film ▶ Won two Oscars for his work on special effects technology

Business ▶ Tableau's analytics software will bring in \$65 million this year