# TIME
# digital

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# THE DISAPPEARING COMPUTER
## EUROPE ENTERS THE POST-PC ERA

SUPPLEMENT TO TIME / ILLUSTRATION FOR TIME DIGITAL BY STUART BRIERS

# NOT VERY PC

A new generation of devices is moving computing power off the desktop and into everyday items—TVs, phones and even park benches—making access quick, easy and less costly

By **JENNIFER L. SCHENKER**

**MAMA KNOWS BEST:** Telia's "Mama" combines the functions of a TV, computer and phone and will also house smart agents who help run the home. A phone-video screen, top, lets you see callers

**M**ary and Alex Murray, retirees living in Corstophine, a suburb west of Edinburgh, use a personal computer mainly to exchange e-mails with their grandchildren. "The family pushed us into using it," says Mary, 65. But getting the PC to do what they want has been a "hair-tearing experience," even for Alex, 74, a trained engineer. "PCs have their own language and their own logic which sometimes defeats me," he says. The Murrays, like most people, have often wondered if there isn't an easier way.

There is—and it may be coming soon to a café, pub or even a park near you. The Murrays are among a select group of people across Europe who have been asked to experiment with consumer-friendly computing devices embedded in café tables, school desks, park benches and billboards. The focus is on using computers to enrich real communities rather than building virtual ones. Ambient computing, which involves moving computing power from the desktop and embedding it in everyday objects, is supposed to help make this happen. "We need to translate technologies into things that people like and understand," says Irene McWilliam, a senior manager in design research at Dutch electronics giant Philips and coordinating partner for the E.U.'s Connected Community research projects. "There is an opportunity for European companies to exploit their design skills to make technology fit different cultural backgrounds."

One way is through interactive tables placed in cafés and other public places, which the Murrays and other Edinburgh residents have been testing. Rather than sitting alone in front of a PC, users of these Internet-connected tables share one or more screens in a collective environment. The focus is on finding useful local information like babysitters, bicycles for sale, extended opening hours at the zoo—the kind of things people normally find scrawled on bits of paper tacked to bulletin boards in grocery stores.

The tables employ touchscreen technology, so users can either point to what interests them or slide a token over the desired information and have the token automatically download it. "[The table] is much easier to use than

a PC," says Alex Murray, "and it's a great way to bring people together. In today's society lots of people are very lonely, despite the great expansion of information. People in communities are not in contact as much as they were in the olden days."

The European Initiative for Intelligent Information Interfaces (i3), which includes 300 researchers from 100 organizations, is working to change that. Projected Realities was tested last June in the Bijlmermeer area of Amsterdam as a way to promote socially responsible graffiti. Digital screens were embedded in the backs of public benches that allowed residents to post brief comments about matters of local interest. "Community walls" are being tested in the Italian city of Venice. Using technology from Xerox, locals can write a message on regular paper, insert it into a scanner and see their comments instantaneously organized into categories by intelligent agents and transformed into an electronic message on the billboard. Meanwhile, the Networked Interactive Media in Schools project is testing the use of big interactive screens to replace blackboards in German classrooms. The projects, which involve commercial companies and academics, receive partial funding from the European Commission. Starting this month, the Commission is seeking ideas for a new wave of related projects under the theme The Disappearing Computer.

European companies are taking up this theme independently of the Commission-backed projects. For example, Philips is embedding technology into everyday items through its Connected Pl@net project. One scenario, to be presented at CeBIT, involves a Hong Kong businessman about to take a trip to Paris. On his way to the airport he switches his mobile phone, previously programmed to keep track of his sports activities, to holiday mode, allowing



JONATHAN OLLEY—NETWORK FOR TIME (2)

**INTERACTIVE WORLD:** Café tables and blackboards are now being packed with computing power. Touchscreen technology allows people of all ages to operate the devices easily

## The focus [of ambient computing] is on using computers to enrich real communities rather than building virtual ones
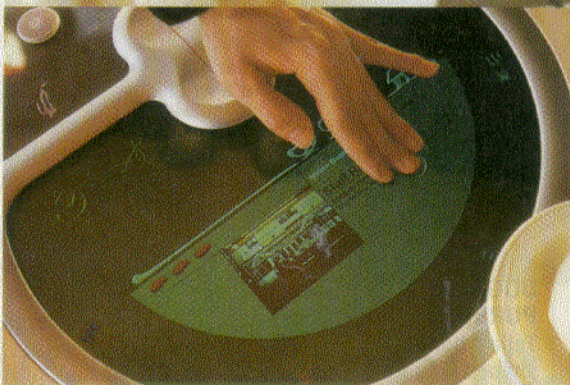
him to divert unwanted calls and download his travel itinerary, tickets and maps from the Internet. Once airborne, the phone automatically switches to an approved on-board network that includes e-commerce facilities. He is offered translation software—Chinese to French—and after purchasing and downloading it he tries it out on the passenger next to him. The passenger talks into the phone in French and the phone sends back a short message service text in Chinese. In Paris, the globetrotting exec consults maps and a location service to lead him to the Eiffel Tower, where he uses the same device

to snap a picture and e-mail it to his friends back home.

Philips stresses that these new devices won't just be used by jetsetters. Another scenario involves two eight-year-old girls who use their phones to keep in touch with their parents and play computer games with friends. Their mobiles will be equipped with proximity sensors based on wireless Bluetooth technology to help them find playmates. Arriving home, the girls are recognized by their front door and are asked for their personal voice recognition password. The home networking hub notes their presence and lights up

the house while automatically informing the parents that the girls are home.

Computing power will reach more and more people, says Stacy Elliott, Microsoft's digital diva tasked with helping women and seniors feel more comfortable with technology. The fastest-growing population on the Internet is composed of neophytes who find tech talk and operating systems unintelligible, she says. In a recent U.S. survey of 400 women over the age of 30, some 80% could not define the terms bit, byte or ISP, according to Elliot. "We need to help people ... not [to] be intimidated by technology, to create value for them rather than take time away," she says. A slew of companies are setting out to do just this through "smart" appliances that interact with each other and connect to the Internet.

The research laboratory of Swedish phone company Telia is coming up with a host of innovative home networking ideas, including an electronic probe that can be used to figure out the ingredients in prepared foods that might cause allergies or to help when cooking from scratch. The probe, which is able to download recipes from the Internet, detects the molecular structure of the meal in question and guides the chef though the cooking process.

Say you're cooking spicy Indian food but don't have the right ingredients—you need to replace hot peppers with peppers you got in the local store. The probe will test what you're cooking as you cook and advise you on how much of which ingredients to add to get the best results. "Even if your mother-in-law won't give you the recipe, you can figure out her secret [with the probe]," says Lisa Cajander, a designer who works in Telia's Stockholm-based lab. Telia does not commercialize its devices, but is in talks with consumer electronics manufacturers interested in bringing the products to market.

Another Telia prototype, a collar for the family dog, is fitted with a bone-shaped device packed with global satellite positioning and GSM phone technology that allows the owner to track the dog down should it run away.

Or, for video conference calls with distant relatives, Telia is designing picture frames that are actually screens with built-in cameras that can be moved to allow eye

**UPWARDLY MOBILE:** With Philips' interactive technology, mobile phones will offer everything from translation services for travelers to proximity sensors for kids looking for playmates

**WELL-WORN:** Telia's open air activities communicator lets you monitor not only your vital signs but also e-mail messages or even the weather forecast at the flick of a wrist

**DOGGED PURSUIT:** Telia's bone-shaped Fido tracking device will enable dog owners to locate a lost animal or summon their pet via global satellite positioning and GSM technology

**ON THE BOOKS:** Telia's DVD player, shown between these books, is an example of how the firm is embedding computing power in unobtrusive ways

contact with each member of the group. And who wouldn't want a little helper to run the house and take care of life's mundane chores? Telia's "Mama" prototype is designed to be the central interactive gadget in the home, combining the functions of a TV, computer and phone. A thin, transparent device that resembles a candy dish, Mama can be placed on a coffee table or hung on a wall. The screen can also be used to conjure up the image of an intelligent agent—family members can choose from a cast of characters that includes a woman named Breeze as well as famous cartoons or film stars. The agents run the home network and control other devices both within and outside the home. For example, if a person wanted to spend a weekend at their summer house, an agent could remotely access the refrigerator there to determine what was in stock and order groceries.

Telia's lab has also developed a velcro armband that monitors the wearer's body functions and includes a flat display panel that doubles as a screen for video and still images wirelessly downloaded from the Net. When in a car, the user can strip off the band and stick it on the sun visor, transforming the device into a navigational tool.

Outside the home, the COMRIS Parrot—a wearable computer that can be strapped to the shoulder—is being tested as a way of bringing people with shared interests together. At present, Parrot users must log onto a website and fill in details about their interests, as well as tips on the kind of people they'd like to meet. Later versions of the device are expected to build on previous experience to guess what the wearer wants.

Tourist offices could use Parrots to help visitors find their way around unfamiliar cities, while airports could use them to contact waiting passengers with information about flights and shopping. "[The Parrot] is something that will compete with what we now know as the mobile phone," says Walter Van der Velde, head of research at Starlab, a Belgium-based independent laboratory participating in the COMRIS project.

Starlab has separately launched the i-Wear intelligent clothing consortium, which includes Adidas, France Télécom and Levi Strauss

Europe among its sponsors. As part of that project chemists, health experts, computer scientists and engineers are collaborating to produce networks of sensors in clothing to alert wearers to hazardous substances in the atmosphere or to monitor a person's vital signs. Starlab is even developing a washing powder that generates electricity when clothes are washed. When the freshly laundered clothes are exposed to light they act as wearable batteries that could power a device such as the Parrot.

Meanwhile IBM is working on technology that allows computers to recognize gestures, removing the need to type in a command or even talk. One project called SUITOR is developing a way for your gaze to control the browser. The content delivered is dependent on knowledge the computer has acquired about your interests and where you fix your eyes on the screen. "People will no longer need [computer] training because the technology will be pervasive and the interaction more natural," says Myron Flickner, a researcher in the field of computer-human interaction at IBM. When that happens, living with computers should get a lot easier for everyone. —With reporting by Peggy Salz-Trautman/Bonn

# HOME IMPROVEMENTS
## In a London suburb, domestic bliss gets a boost from cyberspace



From the outside it looks like any ordinary mock Tudor-style family home. But this house, in Watford, a suburb 26 km northwest of London, is more than ready for the age of the Internet.

In addition to standard features like double-glazed windows, the house is equipped with everything you need to download audio, video and data and remotely control all the gadgets in your house: 72 data ports, 72 cables, one networking router, four 64-kilobit-per-sec. digital network lines providing eight digital communication channels, two standard phone lines, five Internet-enabled digital cordless phone handsets, four personal computers, including one that acts as a server and another equipped for videoconferencing, an Internet access service that offers speeds of 384 kilobits per sec., and four webcams. All for a modest $800,000.

The Watford abode is not a showcase for the future. All the technology is available today and the five-bedroom home is up for sale, targeted at families with three children. Built through a collaboration between U.K. construction concern Laing Homes and U.S. networking company Cisco Systems, it is one of nine residences in the Brandon Gate development that is

**AT YOUR FINGERTIPS:** Coffee machines take orders from a webpad, above; that's a webcam, right, next to the cactus

being equipped with the type of high-speed cabling necessary for "smart" homes. The gizmos are optional.

Though I'm not in the market for an $800,000 home, I decided to spend a day in Watford to check it out. Equipping this home for the cyberera cost about $13,000 for infrastructure and installation fees. Not included in the overall price tag: $32,000 worth of cutting edge extras like flat screen TVs.

But prices for such technology are falling rapidly and Laing Homes vows to install the cabling in all of its new homes and apartments, regardless of price bracket. This high-tech home is part of a trend that Bill Nuti, president of Cisco Europe, Middle East

and Africa expects to see across the Continent.

While in the living room I used one of two wireless smart devices called webpads to remotely instruct the coffee maker to brew some java. I zapped recipe cards with an infrared scanner embedded in the top of the phone to electronically track what was in the larder. I ordered pizza over the Internet (and it arrived hot!) via a wireless keyboard that also controls browsing on the digital TV set. I tested a central system that allows you to preprogram and control heating and other household functions. And, using "white-

board" software, I handwrote text messages on-screen to a correspondent who watched —and replied.

While everything worked well enough, I couldn't shake the feeling that it is still early days. I videoconferenced with a Cisco employee—my only choice for a conversation partner—because none of my friends or family have equivalent technology. I couldn't order groceries online because the local supermarkets need more than a few hours' lead-time for delivery. And even if I had been able to order, only one local supermarket—Somerfield—uses the recipe card scanner technology to help the home network determine what is needed.

Still, I can see the potential. It would be useful to be able to remotely turn off the iron, for example, and end those nagging fears. It would be helpful to instruct the house to notify me if the temperature exceeds a certain level or if there is a change in the water pressure. It would be nice to use a webcam to keep an eye on a sleeping baby. If the pundits are right, all this and more will be coming soon to a home near you—or perhaps your own. —J.L.S.