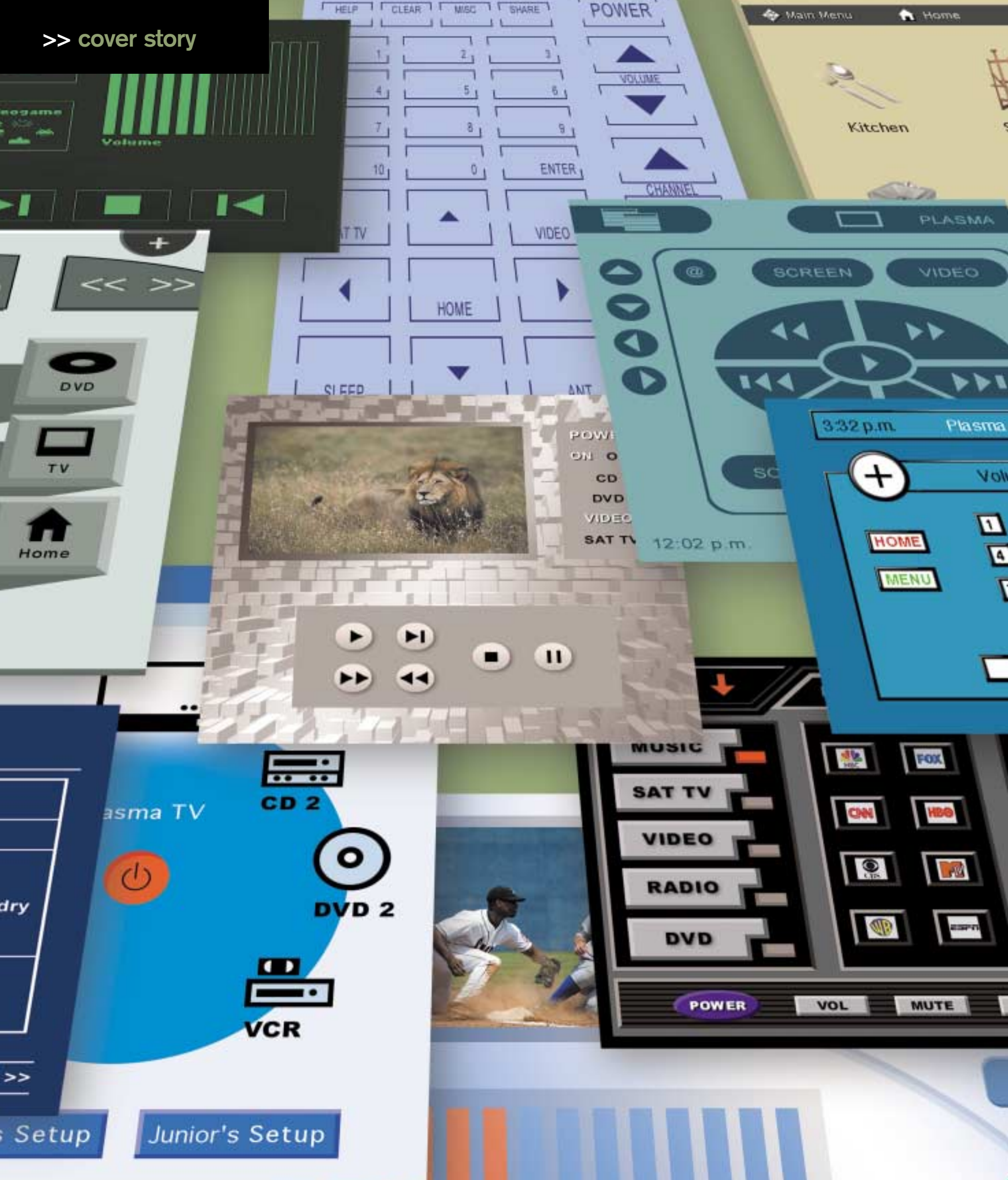

HELP
CLEAR
MISC
SHARE
POWER
VOLUME
CHANNEL
ENTER
HOME
VIDEO
Volume
Main Menu
Home
Kitchen
PLASMA
SCREEN
VIDEO
DVD
TV
Home
<<
>>
3:32 p.m.
Plasma
HOME
MENU
12:02 p.m.
CD
DVD
SAT TV
MUSIC
SAT TV
VIDEO
RADIO
DVD
POWER
VOL
MUTE
FOX
CNN
HBO
CD 2
DVD 2
VCR
asma TV
Junior's Setup

CONTROL ISSUES

ARE TODAY'S REMOTE INTERFACES UP TO THE TASK?

Count on Ozzy Osbourne to act as mouthpiece for a marketplace. In one of the first episodes of his family's popular reality series, the Ozz can't work his own video system, even though he's been provided with a customized remote control. The baffled hero laments to millions that "you've got to have computer knowledge to turn the TV on and off! I press one button and the shower starts!"

It'd be comforting to chalk this comment up to substance abuse and/or overexposure to arena rock. But everyone knows Ozzy's not the only one, and these days, his sentiment is being echoed by some not-so-usual suspects. If you peek your head outside the CE industry bubble, you'll see even educated, technology-savvy people struggling with technology interfaces. Perhaps Donald Norman, a professor of computer science at Northwestern University and former VP of advanced technology at Apple Computer, said it best in his timeless essay, "The Perils of Home Theater": I am appalled by the lack of understanding of consumers in the home theater industry, by the complexity, by the emphasis on jargon, by the lack of standards.…"

The importance of a user-friendly controller simply can't be overemphasized — truth be told, it makes or breaks a system. And that importance only grows as technology layers/sophistication levels increase. But even today's best remote controls — as powerful as they can be — are proving to be beyond the comfort zone of many end-users. Controller manufacturers continue to experiment and refine, in hope of some day producing the perfect combination of functionality and usability. But their goal may be an elusive one — perhaps even an impossible one.

HOW WE GOT WHERE WE ARE

Remote control for home entertainment has a surprisingly long history, with Zenith premiering its Lazy Bone, Flashmatic and Space Command controller models in the early 1950s. The Space Command, designed by Zenith engineer Robert Adler and based on ultrasonic principles, went into commercial production in 1956, and its design served as the prototypical TV controller model through to the early '80s, when the industry moved to infrared (IR) technology. In other words, consumers had nearly three decades to grow accustomed to the interface conventions we take for granted today — up/down keys, arrows, enter buttons and the like.

In the late '80s, touchscreen-based control devices began appearing on the scene, as companies like Crestron and AMX developed product lines aimed at higher-end applications, in which the range of objects/actions to be controlled was much larger. While there's no overestimating the "wow" factor these controllers elicited then and now, those early jobs were a lot less complex than today's digital duties. There weren't a half-dozen surround sound formats. Few people knew what an aspect ratio was, much less how to control one.

In 1998, both Philips and Harman Kardon developed touchscreen-based controllers fit for a wider consumer base. Philips' Pronto line kicked off at CEDIA '98, and in retrospect, can be seen as a revolutionary product. The Pronto featured a backlit touchscreen, some select hard buttons, an RS-232 communication port and the ability to perform basic lighting and some automation tasks. Harman Kardon's competing Take Control, meanwhile, used setup wizards to establish customized feature/function buttons, so that only user-designated control buttons were made visible, reducing clutter.

The new century brought forth a growing market for integrated A/V and whole-house systems. With it came an urgent need for newer and better system controllers that were more powerful, but at the same time, simpler to operate. In today's complex digital home environment, populated by audio, video, communications, security, lighting and networking products by innumerable manufacturers, system controller philosophies have settled into opposing camps, each championing a slightly different recipe for intuitive remote control functionality.

HARD-BUTTONS AND HYBRIDS

Though few and far between, there are some strictly hard-button-based universal remotes being manufactured for the custom installation arena. Xantech's URC-1, for instance, uses "Sequence" keys and sliders to navigate between four different layers, each of which controls a different array of devices/components. The URC-2P takes the design one step further, with multiplied macro functions and compatibility with Xantech's SmartPad control keypads. Speaking directly to baby boomers, Xantech intentionally moves away from touchscreen-based control, and puts its apples decisively in the "tactile feedback" cart.

For all the advancements in touchscreen user interfaces, the truth is that many consumers prefer the perceived simplicity of direct, dedicated buttons on the remote. Somewhere between the "clickers" of old and fully digitized controllers found in

<BY JESSICA MILLWARD>

tomorrow-homes are hybrid hard-button/LCD remotes. These controllers combine an LCD screen, along with its expandable programming and display functions, with the comfort factor of real buttons. In this category, big-name component manufacturers duke it out with controller-specific vendors.

For example, Sony's RM-AV3000 combines an LCD screen for customized labeling capacity with joystick-style hard buttons for more basic functions, like volume control and channel scrolling. In the same vein, Marantz's hybrid model, the RC2000mk2, uses a utilitarian LCD display and more limited macro ability. Home Theater Master universal remotes, manufactured by Universal Remote Control, use hard buttons and either viewscreens or touchscreens to control home theater components. The Philips Pronto line also includes one such hybrid model, the ProntoNEO, with its blue backlit touchscreen and various direct-access buttons. In a variation on the theme, Intrigue Technologies' Harmony brand remotes also employ the display/button composite control concept, but these controllers distinguish themselves through their Web-based setup process.

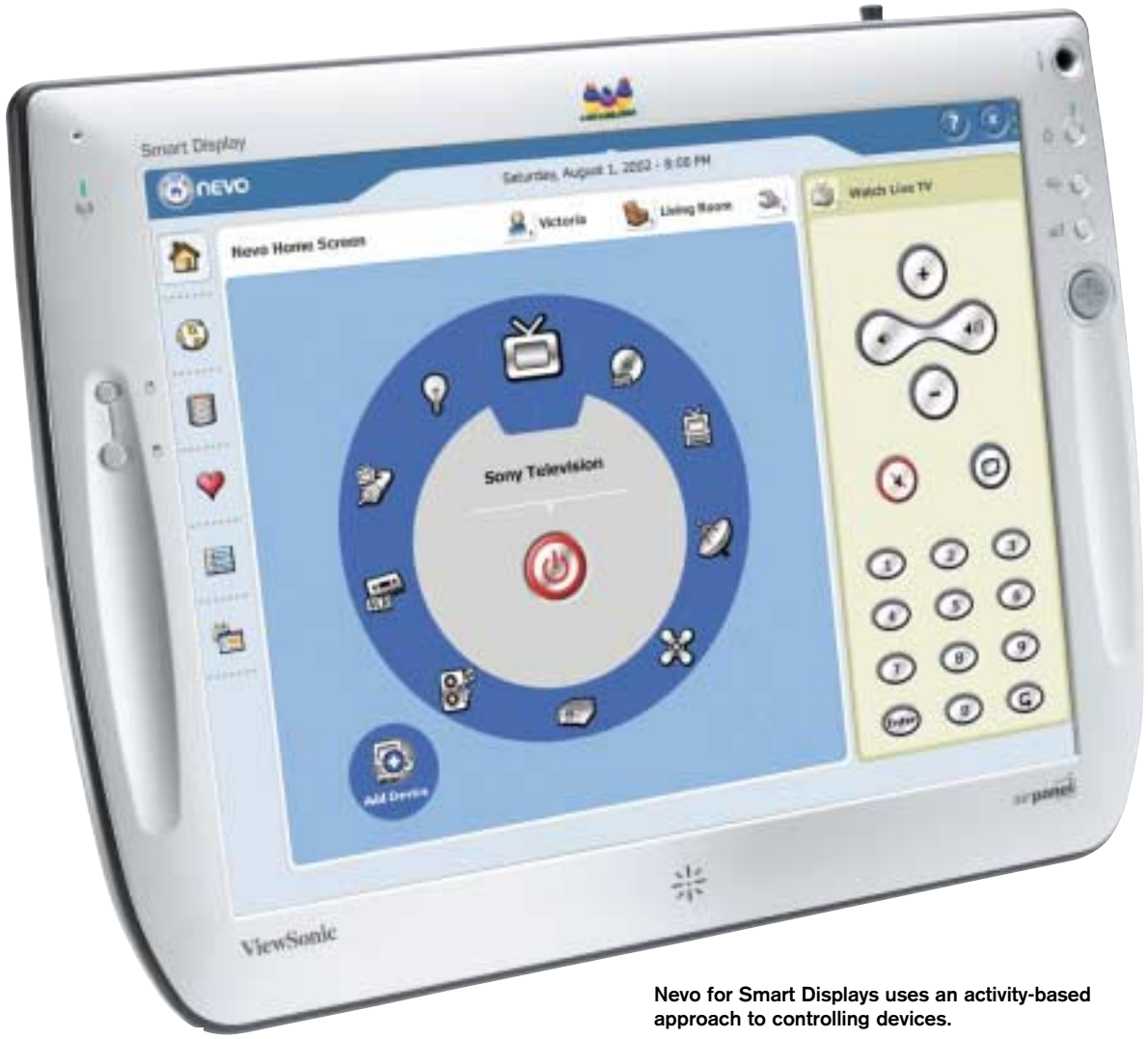
TOUCHSCREENS AND TABLETS

The touchscreen controller category comes in various flavors. Handheld touchscreens' best-known examples are found in the Philips Pronto line, consisting of the Next Generation, ProntoPro and (comparatively) plain-vanilla Pronto models. But there's also lesser-known A/V OEM Proton USA's SRC-2010 low-cost touchscreen controller, and Marantz's latest handheld remote, the souped-up RC9200, featuring a large touchscreen-based interface.

Then you've got tablet-based touchscreens, which inch closer to the idea of "convergence control." Philips bills its iPronto (TSi6400), for instance, as the "Dashboard for the Digital Home." It incorporates universal A/V, automation and lighting controls with content-navigation capability, via its Electronic Program Guide and an Internet browser. Similarly, Universal Electronics' Nevo software, billed as a "visual interface for the connected home," is now available in a "Smart Display" incarnation, realized in ViewSonic's "airpanel" displays. (Nevo has also been implemented, using a different, customized configuration, into HP pocket PCs.) Launched at this year's CES, Nevo for Smart Displays aims to bridge the gap between personal computing and consumer electronics by wirelessly integrating and controlling content from both the PC and the A/V system.

Finally, there are the pedestal- and wall-mounted, touchscreen-based whole house control solutions by the likes of CorAccess, Crestron and AMX. The "baby" of the bunch, CorAccess began business in 2001, and has since taken home CEDIA awards for its Macromedia Flash-based interfaces. Crestron's latest additions to a long line of upper-echelon control systems include new Isys touchpanels, which feature real-time video support, stereo speakers and optional, 330-degree rotating bases. And in April, AMX rolled out its NI Series of NetLinx controllers, featuring 32 MB of onboard RAM and 32 MB of FLASH memory (expandable to 1 GB), available in single-room, mid-sized and whole house configurations.

No matter what the length of their spec sheets, the goal of all of these controllers is to provide customized, familiarized shortcuts to operating increasingly elaborate electronic systems. The number and variance of solutions posed to the system controller challenge is a testament to its complexity. In choosing between them, the question is: How close does this controller come to that ultimate intersection of capability and usability?

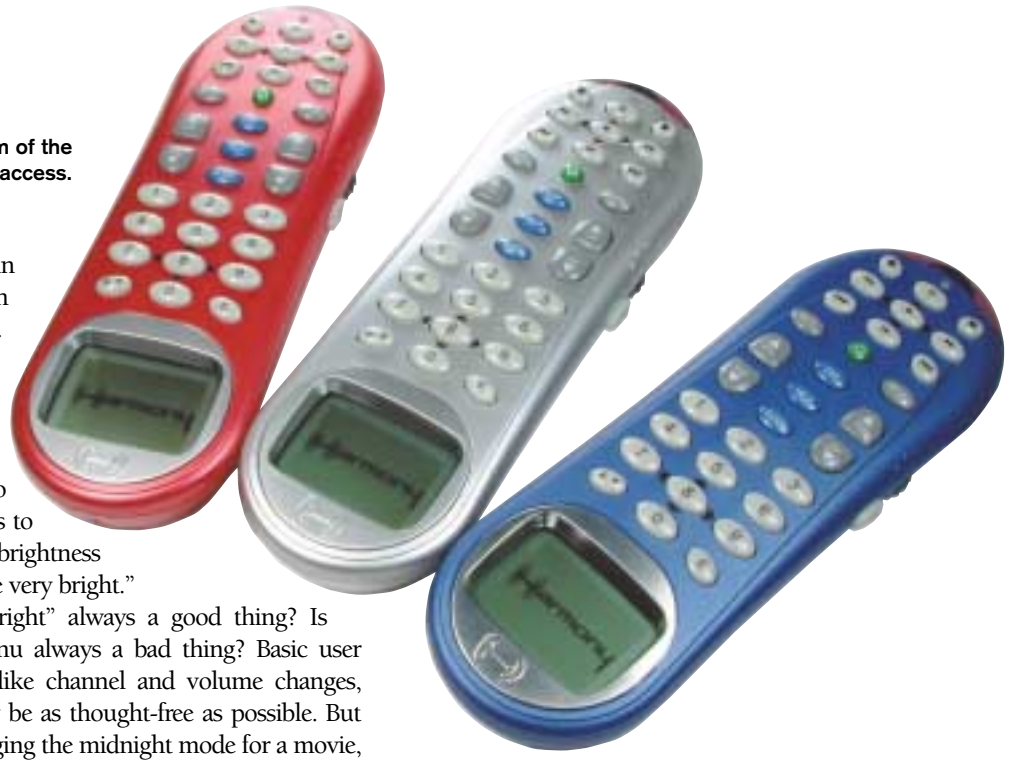


Nevo for Smart Displays uses an activity-based approach to controlling devices.

WHAT DO PEOPLE WANT FROM THEIR REMOTES?

While functionality can be measured, the usability factor in system control is hard to perfect, simply because it's hard to identify; it changes, sometimes drastically, from user to user. Product development, as controller manufacturers have found, is an attempt to cover the broadest base of customer wants. As Robert Noble, director of product development for AMX, testifies, "If you ask 30 people what they desire in a product, most likely you will get more than a dozen different answers. [AMX's] goal with our new controller series is to identify that 80-percent circle around the feature set that would address the majority of needs in the marketplace."

Often, the starting point in product development is creating a generic identity around that common base. Nevo software for Smart Displays, for instance, was created using a character-based design; the R&D team started its programming efforts with fictitious "Victoria" in mind. While not a hard core A/V enthusiast, Victoria very much enjoys using her audio equipment, watching DVDs, etc. Ramzi Ammari, senior director of product management, recalls conducting usability interviews with 75 random consumers —from housewives to businessmen to teens — in the pre-testing stage of the Smart Display module. He notes, "When we did the initial alpha testing, we took 12 of those 75 people, gave them the early version of the Smart Display and literally videotaped them each for about two hours." In so doing,



The Harmony 768's LCD is placed at the bottom of the remote, to allow for easy, one-handed scroll-wheel access.

Stevens points out, the Nevo team could pinpoint what was intuitive and what wasn't.

In a broad sense, the differences between controllers often reflect the manufacturer's established control philosophy. Traditional remote control orthodoxy takes a device-based approach, i.e., "I want to control my DVD player." The "new school" designs controllers with an activity-based mindset, i.e., "I want to watch a DVD." In high-end control systems, this has manifested itself in the continuous improvement of macro programming, and an entirely new discipline for integrators/C-tailers to learn. In more modestly priced controllers, this design shift has provided the cornerstone on which some remotes are built.

For example, activity-based interaction dictated the fundamental design code for Intrigue Technology's Harmony remotes. When initial planning on the Harmony line began in 1999, the bottom line was activity-based control with a wizard-guided and automated setup interface. Geoff Lyon, Intrigue's VP of sales and marketing, explains, "The only way that the Harmony remote could deliver activity-based control … was to have a very elaborate database, and the only way possible to manage that ongoing database … was to have an Intranet-based model." That way, customers' requested IR codes, queries and suggestions could be compounded into a central database; thus, a "Napster-esque" sort of information well was established and expanded rather quickly.

To configure the remote, users install Harmony software on a PC, attach the remote via USB and log on to the Harmony Web site to program in their home theater components. From a physical standpoint, the Harmony remote aims for one-handed control, with its thumbwheel/scroll select switch on the remote's side, and an LCD placed at the bottom of the remote, to keep the user's thumb in close proximity with the remote's hard buttons.

TOUCHING IS BELIEVING?

The significance attached to tactile sensation is a major dividing line among controller camps. The level of satisfaction gained from physically pressing a button down, versus touching a screen, can be argued, but not up for debate is the effect that pure touchscreens have on viewing. Eric Johnson, principal for the HomeTheaterPro consultancy group and a member of the Home Theater Master product development team, laments the inevitability of what he calls "touchscreen nod." He states, "When you operate a touchscreen system … almost every time you use the system you need to view an onscreen menu to make something happen." Xantech, too, implicitly recognizes this problem in its URC remotes; product literature for the controllers emphasizes that, "users want to watch the screen and control the remote without wearing reading glasses." Screen technology, however, is making rapid strides in an effort to eliminate that eyeglass requisite. CorAccess, for one, has invested heavily in superior screen presentation. President Craig Slawson stresses, "We use a very expensive TFT screen; we also tweak the screens to go into a high brightness mode, so they are very bright."

But is "very bright" always a good thing? Is looking at a menu always a bad thing? Basic user control actions, like channel and volume changes, should obviously be as thought-free as possible. But what about engaging the midnight mode for a movie, or returning to live action from paused TV? Should these functions be "up front" and always immediately accessible, or placed in a secondary or tertiary menu? Does a remote that takes your eyes off the movie or your ears away from the music really do what it's supposed to do? Can anyone agree?

FOR BETTER OR WORSE, MONEY TALKS

Though even today's relatively inexpensive universal remotes boast impressive control feature sets, the line of demarcation between control camps' power is ultimately drawn by price, and by the programming abilities of the custom installer. True whole-house control still seems to be a province of the big-ticket systems from AMX, CorAccess and Crestron, and other companies that are trying to do the same kinds of things with non-proprietary operating systems, like Premise.

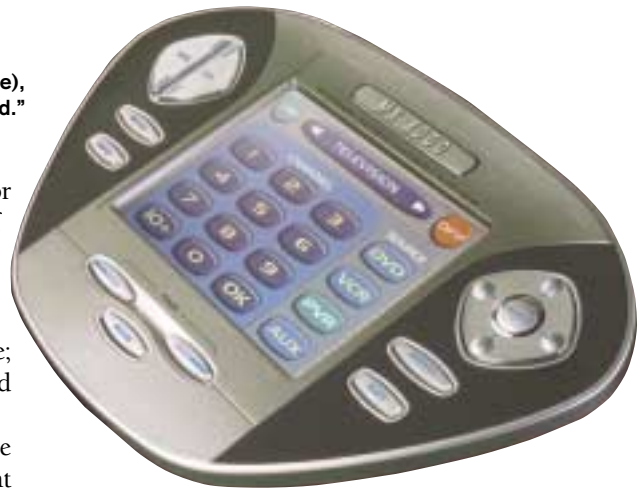
Payman Pahlavan, CEO and president of Dallas-based custom integration specialist Customized Home Theater, says the installer can't overemphasize the significance of the control system, even if a customer may initially balk at its $7,000 to $20,000 total cost. Universal remotes in the $50-, $100-, even $300-region, he says, just don't offer the customization required for truly techno-phobic users. "There is no way the end user is going to remember what a specialty button that just says 'Info' is going to do," he insists. Add to that the fact that his company "has never had good luck" with IR frequency room systems. "Since most IR remotes on the market are one-way communication [devices], something can easily get out of sequence," Pahlavan says. "So I've found that I put a lot of emphasis on a control system — that it should be completely bullet-proof. When you get to that level of control, it limits your choice to basically two systems on the market: AMX and Crestron."

The cost issue prompts another dividing line between controller philosophies and development efforts. While both Harmony remotes, a few of the Home Theater Master and Pronto models and the Nevo software have evolved to make controller setup as simple as possible, higher-end systems, with more devices to learn and more capabilities to render, are built specifically for the trained professional to program. System controller manufacturers want to increase the user-friendliness factor of their controllers, but only to a point. Speaking about CorAccess' customized home control systems, Slawson asserts, "We're delivering toasters. Meaning that when you use your toaster, you can adjust a level to determine how brown your toast will be, but you can't program the steps of each increment between browning levels." Nine and a half times out of ten, system adjustments in such applications necessitate the physical presence of the custom installer.

BUILDING A BETTER REMOTE

Fortunately, controller manufacturers recognize budget constraints, and have become fairly adept at improving remotes specifically for the context in which they'll be used. Intrigue premiered its Harmony 748 remote in February, targeted toward installations in which the home doesn't have satellite or digital cable, using other models' user-friendly design minus some of the extras. Lyon reports, "It's the remote I gave my mother. If you've got analog cable, it's nice to have a remote with a TV guide on it, without having a lot of extra buttons." Both the 748 and the 768, Harmony's flagship remote, position the LCD screen at the bottom of the unit, encouraging users to flatten it out, and point it directly at the entertainment system while viewing. Editorial reviews of the 768, especially, have been extremely positive, but the brand needs work in one major area: its lack of support for Mac and Linux platforms. While Windows simulation software may offer "Harmony potential" to some non-Windows users, the company is under pressure to step up ongoing efforts to make the programming interface fully cooperative with non-Microsoft operating systems.

Universal Remote Control's Home Theater Master brand is going after a slightly more up-market audi-



The Home Theater Master MX-3000 (prototype pictured here), will attempt to avoid "touchscreen nod."

ence with the launch of its MX-3000 unit, scheduled for this summer. In developing the 3000, Johnson says, Universal realized a book is at least partially judged by its cover. "There are two factors the consumer is considering when buying a remote control: There's prestige, which dictates that the remote should feel expensive and look expensive (because it is expensive); and the remote's ability to actually work well." So product designers at Universal set themselves the challenge of using and enhancing the touchscreen while simultaneously reducing "touchscreen nod." The 3000's color screen is therefore arranged horizontally, rather than vertically, and employs animation for the first time in Home Theater Master history. To keep it light, the 3000 also borrows the ultra-dense, ultra-thin batteries used by Palm pilots and other pocket PCs.

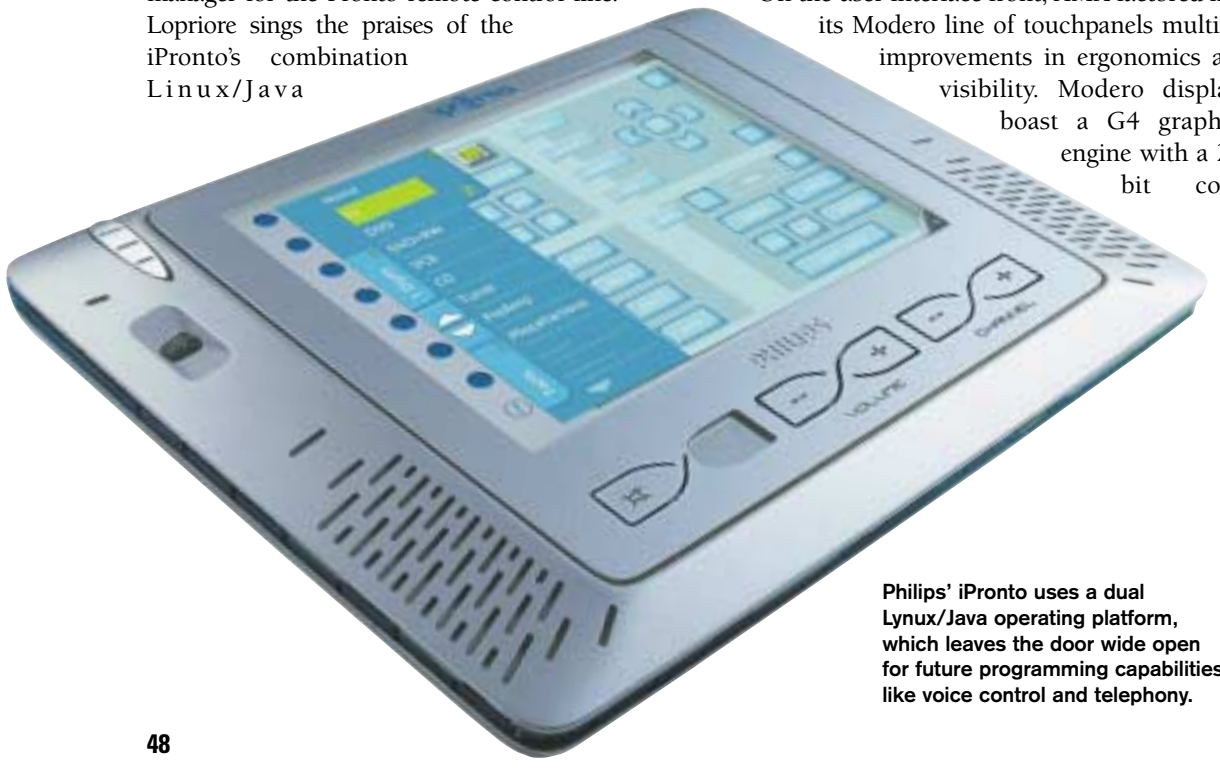
As was the case for the Harmony team, Nevo for Smart Display developers also focused on how users would most comfortably interact with their controllers. Nevo's Ammari reports, "We thought it would be more intuitive to create activities, rather than modes, for example, 'I'm watching TV,' rather than 'I'm in TV mode.'" Nevo also uses a control wheel to manipulate devices; its setup is unique in that the user sees all components on one screen. But the real specialty lies in its PC-partnering abilities. Stevens notes the Smart Display technology is a step in the direction of "TeleWebbing," through which broadcast content coming from the cable/satellite box, or aerial antenna, is connected to related interactive content being broadcast over the Internet. Thus, Nevo's favorite channel keys not only tune in favorite channels, they also connect to the URLs of corresponding Web sites.

Philips' top priority is building on its iPronto capabilities, according to Tracy Lopriore, marketing manager for the Pronto remote control line. Lopriore sings the praises of the iPronto's combination Linux/Java operating system, which she says will allow for more flexibility in future programming, in terms of product downloads and third-party applications, including voice control and telephony. While the unit itself is 9.4 by 7 inches in size — not exactly a one-handed control — it is at least semi-portable; at only 1-inch thick, it weighs about 2 pounds and is completely wireless.

In formulating his company's controller source code, CorAccess's Slawson and his R&D staff went through numerous operational platforms. He recalls, "We looked at different operating systems, we looked at different interface environments, we've gone through DOS, we've gone through CE, we've gone through Linux, HTML and Java." After years of experimentation, CorAccess decided to license Macromedia Flash source code. Clawson maintains, "It is very robust, very animated, very vector-based, and very lightweight." The company then built the Macromedia interface in both streamlined plug-and-play controllers and fully customizable control systems.

As its latest development challenge, Noble says AMX set out to create an equivalent to the existing NXI/ME260 product from an I/O port point of view, but at a reduced selling price. The new NI-3000 accomplishes this, and also features NetLinx Studio for the creation, download and debugging of NetLinx code; a Design Xpress tool set for customizing whole house audio and home theater solutions; and the Internet Inside function for interactive Web browsing and control capability. Noble explains, "For example, the customer can use forecast information from i!-Weather to help determine when to water the lawn; when to close the shades on the West side of the house; and to send an e-mail booking a tee-time for tomorrow."

On the user interface front, AMX factored into its Modero line of touchpanels multiple improvements in ergonomics and visibility. Modero displays boast a G4 graphics engine with a 24-bit color palette, 400 cd/m² of brightness and an anti-glare touchscreen overlay.



Philips' iPronto uses a dual Lynux/Java operating platform, which leaves the door wide open for future programming capabilities, like voice control and telephony.

ACHIEVING CUSTOM CONTROL

Given the diversity of clients' needs and wants, custom installers are quick to point out that a one-size-fits-all control solution just doesn't exist; a specific system is selected only after numerous criteria are considered. Seattle-based Metropolitan Audio and Video, an ultra high-end installer with a client list that includes members of both the SuperSonics and the Mariners, has experience with AMX systems, Prontos and iProntos, as well as a host of other learning remotes. President Allan Stevens says he considers three major factors when determining the best-suited control system: "The first is the size and scope of the job, the second is the user's willingness to participate in the technology and the third is the budget." The price tag, obviously, plays the biggest part. The customer can get a black-and-white Pronto, programmed, for about $600 to $700, or an AMX system that runs anywhere from $5,000 to $10,000. "Both of them," Stevens says, "ultimately do the same thing. AMX offers a little more flexibility and it looks nicer, but they both have the same capacity."

Customized Home Theater's Pahlavan agrees, but adds that even in up-market jobs, "… the hardest part is convincing a client, when he wants to buy a $20,000, or $40,000 or $100,000 system, that the remote control portion of the job might cost anywhere from $7,000 to $20,000." Even in exceedingly complex whole-house jobs, customers often think remote controls should cost in the $100 to $300 range.

Having said that, on his company's smaller jobs, in which $300-level remotes make more sense, Pahlavan recommends that the client handle the programming of the remote. "It might take us six or seven hours to customprogram that [$300] remote, and the labor it takes to do that costs much more than the remote itself."

SO WHICH ONE TO SELL?

Choosing one particular system to specialize in, among a field of similar-quality competitors, often comes down to service offerings. Pahlavan

states that as a general principal, Customized Home Theater does business with smaller companies, to take advantage of a closer vendor-dealer relationship. “We always get better service and better tech support with a smaller, more localized company,” he insists.

Stevens likewise looks for comprehensive, timely support when he is on an install site. Recently, while programming a new touch-panel control system for the first time, he grew frustrated after spending over 45 minutes getting through automated answers in the manufacturer’s help desk center. Such time lags on customer sites hurt both the client and the installer. “It costs your customer $75 per hour for you to sit around and figure something out, and you run out of time. We’re so busy that we generally can’t afford to spend another day at a job, because if we do, we’ll miss the start date of another job.”

Custom installers also appreciate a controller manufacturer’s ongoing effort to work with A/V device manufacturers. Pahlavan bases most of the company buying decisions on ease of automation and integration; he asks controller manufacturers to “try to interface with [device manufacturers] so that the custom integrator can carry any product and integrate it easily.”

Meanwhile, installers still act as sounding boards for seemingly age-old controller complaints. According to Stevens, remote visibility has been a considerable issue in many jobs he’s done, especially for older customers. Remote response, too, is a tough control nut to crack, especially in this era of plasma televisions, and the havoc they may wreak on an IR-based system.

While manufacturers continue to come up with innovative answers to both ergonomic and functionality questions, a system controller that is all things to all CE users will never exist. The objective for any new model in development should be to identify its user-niche; encompass as many of the functions requested by that niche’s constituency as possible; and look way outside of Company HQ for alpha- and beta-level feedback. Though custom-installed systems are spreading, the gap between operational know-how haves and have-nots is also getting bigger. If something isn’t done about it at the point-of-contact, a.k.a., the controller, the result is serious consumer disenchantment.

After all, buying into the custom CE “experience” is a tough task when you can’t find a way to press play. **CR**