

# Graphical Interfaces Spur the Development of Alternative Input Devices

The popularity of graphical interfaces and applications has led to the development of several input devices besides mice. The wide range of alternatives includes trackballs, pens, digitizers, and other more esoteric devices.

**Optical mice.** In addition to mice that get position information from a rolling ball, there is another type of mouse — the optical mouse — that uses optical sensors to read information from a grid (normally printed on a mouse pad) to track motion. Optical mice tend to be more precise than mechanical mice since there's no trackball to slide or skip over a surface. They typically do not work at all without their grid tablets or pads, against which they measure their movement. Mouse System's PC Mouse is an example.

**Trackballs.** Trackballs have garnered a lot of attention because they are similar to the now-familiar mouse. Unfortunately, several of these devices have names that can lead people to believe they are mice — especially since they look like mice turned on their backs. Kensington's Expert Mouse and CH Products' Roller-mouse are two examples. Others have more distinct names — like Logitech's Trackman, Mouse Systems' PC Trackball, and Microspeed's PC Trac.

The major appeal of the trackball is that it promises to reduce the amount of



The Kensington Expert Mouse, a typical trackball, has a centrally located ball.

desk space needed to maneuver. A mouse generally uses as much surface area as a sheet of paper. (Some users get around this by using the mouse on top of their books or papers.) A trackball takes about a third to half as much space as a mouse.

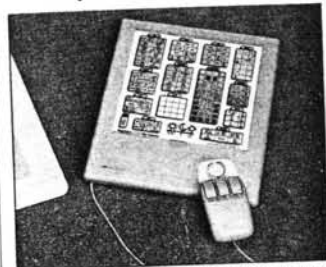
While trackballs take less space, they have disadvantages that mouse users will notice quickly: You lose the feedback of knowing how far you've moved since you no longer move your arm. While you can always watch the screen to see how far the cursor has gone, that missing feedback can be disconcerting to a mouse user. You must also raise your hand and wrist higher than with a mouse, which can result in wrist fatigue. Finally, it is harder

to keep the ball moving in a straight line, especially over long distances, such as when you are jumping up to your program's pull-down menus. Trackball design is still developing as different ergonomic approaches are taken. (We informally reviewed four trackballs in our February 26 Impressions, Page 72.)

**Joysticks.** These devices have been around for what seems like forever, although they tend not to be used on anything but kids' computers and game machines. But there are drivers, such as one from CH Products, that let your joystick input be translated to mouse signals for use in "adult" applications. Joysticks offer one advantage associated with mice — physical feedback about your movement — with one associated with trackballs — their compactness. Some users find it tiresome to move their hands from keyboard to joystick position (the change requires you to rotate your wrist to grasp the joystick).

**Digitizers.** Intended originally for precision drafting and design, digitizers consist of a tablet, from letter size up to "E" size (34 inches by 44 inches) or larger. Inside the tablet is a fine grid of wires. A pointing device (either a penlike instrument or a mouselike "puck") reads its position on the tablet by sensing the coordinates of the wires it is over.

Tablets report absolute position (exact



The Wiz is a mix of digitizer/tablet capabilities and mouse emulation.

x-y coordinates) rather than relative position (the direction and speed of movement), which makes them ideal for any application that requires precise graphical input.

The Wiz, from Calcomp (see "Calcomp Device Combines Mouse, Graphics Tablet," November 20, 1989, Page 104), is a unique digitizer with software that lets it emulate a mouse in addition to working as an ordinary tablet. It comes with both a mouselike puck and a pen, and a group of program-specific templates so that many programs' functions can be activated via the Wiz.

**Pens.** Two kinds of non-digitizer pens let users point to or draw objects on a computer screen. Light pens read their position by tracking when the screen refresh passes underneath them. Newer pen technologies lay a transparent electrical grid over the monitor, akin to the grid in graphics tablets. Grid's Gridpad uses a similar type of technology (see "Scenario Demonstrates Pen-Based Input System,"



The IMCS Mouse Pen works without an underlying grid or tablet.

April 16, Page 8).

**Other input approaches.** Among non-traditional input devices is Computer Support Corp.'s On Command hand-held remote-control system that emulates mouse and keyboard commands.

There is also a product called the Isopoint Control (used in the Outback Macintosh portable) that mounts a rotating cylinder on the keyboard in front of the space bar. A cross between a trackball and a joystick, you slide the cylinder (like a joystick) for horizontal motion and roll it (like a trackball) for vertical motion.

Touchscreens are another option, although they are meant for point-and-shoot applications rather than graphical applications where you are moving unpredictably through a screen while drawing or positioning elements. Hewlett-Packard was an early proponent of this technology, even marketing a touchscreen PC.

And for diehards, there is always the cursor key set on your keyboard.

— Galen Gruman and Raphael Needleman

## FEATURES

## INFO WORLD

### Mice

■ Feature □ No Feature	Keytronic Professional Mouse	Logitech Mouse	Microsoft Mouse	Prohance Powermouse 100
Price	\$109	\$119	\$150	\$249
Version	1.1	4.0	7.0	5.2
RAM used	8K	30K	13K	18K
Resolution (dpi)	200	320	400	200
<b>Hardware configuration</b>				
Number of buttons	2	3	2	40 <sup>1</sup>
Cord length (feet/inches)	4'10"	9'0"	8'3"	5'8"
Mouse pad included	■	□	□	□
Works on COM1 and COM2 ports	■	■	■	□
Bus version available	■	■	■	■
25- to 9-pin connector available	■	■	■	□
PS/2-compatible	■ <sup>2</sup>	■ <sup>3</sup>	■	N/A
PS/2 port connector included	□	□	■	□
<b>Software</b>				
Microsoft-compatible	■	□	■	□
Menu programs provided	5	24	13	15 <sup>4</sup>
User-programmable menus	□ <sup>5</sup>	■	□	■
<b>Ergonomics</b>				
Adjustable sensitivity	■ <sup>6</sup>	■	■	■
Relative acceleration	■	■	■	□
Adjustable acceleration	□	□ <sup>7</sup>	■	□
Command-button indicator	■	■	■	□ <sup>8</sup>
Audible button clicks	■	■	■	far front
Center of gravity	back	front-center	front	■
Easy access for trackball cleaning	■	■	■	■

<sup>1</sup>Prohance has 38 buttons for data and command entry.

<sup>2</sup>Keytronic connects via serial port only, not PS/2 mouse port.

<sup>3</sup>Regular Logitech model connects to PS/2s via the serial port; a PS/2 model connects to serial and PS/2 ports.

<sup>4</sup>Instead of using pop-up menus, the Powermouse uses its 38 extra keys to accomplish the same task.

<sup>5</sup>Keytronic offers menus separately for \$20.

<sup>6</sup>From DOS command prompt only, not from Keytronic's pop-up menu.

<sup>7</sup>There is an option to turn off Logitech's acceleration.

<sup>8</sup>Powermouse's mouse-button clicks are barely audible; data- and command-entry buttons are audible but not distinctively so.