Taking investors for a ride
Real nerds don’t buy computers. They make them.

Plug ‘n’ pray

By Alex Kozinski

In my spare time I snowboard, bungee-jump and fight paintball battles. But for excitement, I build
computers.

Why build rather than buy? It’s not
the price. A state-of-the-art computer
built from parts bought on June 16
cost me $2,800, not including sales
tax. I could have had a very similar
and fully assembled computer from
Gateway 2000 for $3,200, including
delivery. And the Gateway computer
comes with a better monitor, a lot
more software and at least some
technical support.

Still, there’s adventure in building
your own computer. It teaches you
how the computer works and what
might go wrong, which means you’ll
be able to solve a lot of problems on
your own. When the computer
becomes out-of-date—as it soon will—
you can upgrade by replacing the
processor or hard drive, instead of
buying an entirely new system. Most
important, you get precisely the
computer you want—no guesswork.

Many stores that sell computer com-
ponents, such as Fry’s Electronics,
CompUSA, Best Buy and Computer
City, have at least a 14-day uncondi-
tional return policy. If you decide you
need a larger monitor or a faster
processor or you just don’t like the feel
of that particular keyboard, take it back
and pick out a new one, with no ques-
tions asked.

With this comforting thought in
mind, I head to Fry’s Electronics early
one Sunday, shopping list in hand.
Southern California boasts several
Fry’s, huge warehouses stuffed with
a dizzying selection of computer equip-
ment and adorned with bizarre deco-
rative motifs. I favor the Fry’s in
Woodland Hills, which features 20-
foot-tall characters from Alice in Won-
derland, though the Manhattan Beach
store, with murals of Polynesian natives
typing on computer keyboards, runs a
close second. A visit to Fry’s is not just
a shopping trip, it’s a high-tech recon-
aissance mission; salespeople and cus-
tomers carry the buzz on the latest in
computer technology.

I start by looking for a mother-
board—the large circuit board that
forms the backbone of the computer
and into which you plug your micro-
processor, memory and other parts.
Picking the right motherboard is very
important because it determines how
easily you’ll be able to upgrade your
system. I spend an hour carefully
comparing the features of half a dozen
boards and finally make my selection.
As I reverently put it in my shopping
cart, a voice behind me hisses:
“Piece of junk. Returned three of
‘em last week.” I quickly pick another
board and move on to processors.

“Are you getting a 166?” a guy
with a yarmulke asks.

“I was actually thinking of a 150,”
I answer.

“Big, big mistake.” He shakes his
head for emphasis. “Intel’s just come
out with compression software for
real-time two-way voice and video,
but it won’t run on anything slower
than a 166. You’ll be frozen out.”

I’m not sure what he’s talking
about, but I hate being frozen out, so
I go for the 166.

“And it’s stupid to get less than 128
megs of RAM,” my new friend adds.

Shopping list

<table>
<thead>
<tr>
<th>Item</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>Pentium 166-megahertz chip</td>
<td>$532</td>
</tr>
<tr>
<td>PCI plug ‘n’ play motherboard with</td>
<td></td>
</tr>
<tr>
<td>512K cache</td>
<td>180</td>
</tr>
<tr>
<td>32 megabytes of RAM</td>
<td>285</td>
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<tr>
<td>Minitower case with power supply</td>
<td>60</td>
</tr>
<tr>
<td>Seagate 2.1-gigabyte hard drive</td>
<td></td>
</tr>
<tr>
<td>with 10.5-millisecond access</td>
<td>275</td>
</tr>
<tr>
<td>Magnavox 17” monitor</td>
<td>639</td>
</tr>
<tr>
<td>Antec keyboard</td>
<td>45</td>
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<tr>
<td>Qtronix trackball</td>
<td>40</td>
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<tr>
<td>Aspen 28,800-bit-per-second modem</td>
<td>120</td>
</tr>
<tr>
<td>Diamond Stealth 3D 2000 64-bit, 2-megabyte MPEG video card</td>
<td>190</td>
</tr>
<tr>
<td>Audio Wave 32 voice wave</td>
<td>120</td>
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<tr>
<td>editable sound card</td>
<td></td>
</tr>
<tr>
<td>Acer BX CD-ROM player</td>
<td>109</td>
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<tr>
<td>Mitsumi 1.44-megabyte floppy drive</td>
<td>22</td>
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<tr>
<td>Microsoft Windows 95</td>
<td>178</td>
</tr>
<tr>
<td>Total</td>
<td>$2,795</td>
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</tbody>
</table>
Kozinski tussling with motherboard; above (clockwise from left), Yale, Alex, Wyatt and Clayton

Par for computer making is ten hours.

“I thought 16 was enough,” I say somewhat defensively.

He looks disgusted. “Sixteen? That’s like buying a racehorse and clamping a bolt and chain on its leg.”

We haggle a bit and compromise on 32 megs. That’s when I spot the motherboard in his shopping cart.

“Piece of junk,” I say. “Returned four of ‘em last week.”

“No kidding!” He rushes off to get a different one.

And so it goes. Eventually, as the sun sets, I leave Fry’s, hungry and exhausted, pushing a shopping cart full of toys.

The next morning my sons and I open the boxes of electronic goodies and begin snapping them together. We quickly learn that getting a computer working isn’t as easy in practice as in theory, and here begins the adventure. One of my sons carefully secures the motherboard to the chassis with half a dozen screws and plastic snaps, only to find it’s facing the wrong way. Then nothing happens when we turn on the power.

I spend 20 frustrating minutes looking for bad connections before figuring out that the computer is fine, but there’s a short in the electrical outlet.

Worst of all, we have the rare bad luck to get a defective hard drive. I run back to Fry’s a couple of days later, and they cheerfully give me a new one. While I’m there, they check my prices. Two items are now cheaper, so they refund me $40.

The trickiest part of building a computer, though, isn’t putting together the hardware, but configuring the components. Until recently, each component had to be configured by hand—a difficult and often frustrating task. “Plug ‘n’ play” technology has eliminated many of these problems, enabling the computer to recognize and configure various components (such as the modem and CD-ROM drive) automatically. Still, the technology isn’t foolproof, and it can take hours, even days, before everything works right. About ten hours from beginning to end is par.

Is it worth the trouble? If you think of it as trouble, no. If you want to take the computer out of a box and run it, building is not for you. Indeed, if you are easily frustrated by inanimate objects, you probably shouldn’t even attempt to add memory or a peripheral. Get a store or manufacturer to configure your system, and use it until it becomes obsolete.

But if you think of computer making as a weekend project with your children—kind of a high-tech fishing trip—it can be rewarding and educational. I would still caution you not to build your first computer, or any computer you can’t wait for, and to buy only components you can return easily and unconditionally. Plan out the project, read the instructions and pump computer-literate friends and colleagues for information; nerds love to show off.

A personal computer is just a bunch of interlocking components, rather like an electronic Lego set. Figuring out what plugs where takes some doing, but there are a number of excellent books on the subject; I recommend Upgrading and Maintaining Your PC (Abacus Software 1996, $85). Still lost? I don’t do this for everybody, but what the heck: Write me at kozinski@mizar.usc.edu and I’ll try to help.