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MacCAD Survives - Despite Apple
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The good news is, between Apple and MacClone-makers, Mac-family computing could actually experience a renaissance. The newest generation of PowerMacs include top-tier workstation class machines at competitive prices. The bad news is, the marketing folks in the graphics-computer world just don't find CAD exciting, so there is little drive to present these extremely powerful computers as engineering and design workstations.

The clearest example of the problem MacCAD users comes from Apple itself. Responding to CAD SYSTEMS inquiries, Apple PR found only the interactive-media end of the business even understood the questions - and then only in general terms. CAD in all its forms may represent some 60 percent of the graphics market, but video, website, and assorted publishing chores are perceived as growth areas.

Even so, Mac-stalwart software vendors - companies like Graphisoft with its superb architectural CAD software, and Ashlar, Inc., makers of 3D modeller Vellum and 2D Drawingboard - continue to develop elegant software that efficiently applies PowerMac muscle.

Apple's own power-entries, the 9600 series PowerMacintoshes, make the case. The company offers single-processor models from 200MHz to 350MHz, and dual-processor systems based on the 200MHz and 233MHz PowerPC 604e RISCs.

The Apple overall system design shows that engineering is keeping pace with system upgrades, though Apple needs to watch this.

First, Apple uses the PCI bus, now effectively an industry standard. The design builds in things like accelerated graphics and sound, but using the industry-standard bus means that third-party products intended for the much larger PC-family world will work with only a software interface to be supplied.

Second, Apple gets points for not mucking around with strange, single-object interfaces. The hard disk system and CD-ROM drive connect through dual-channel SCSI. No IDE nonsense here. SCSI is faster, more reliable and able to support a range of devices on its own bus extension. SCSI is an old standard, surviving nicely because it is efficient and effective.

Strong as these design features are, Apple needs to be looking to new, bus-less interfaces. Either shared-memory - the SGI low-end tactic, and soon to be released by Intel for graphics as the Accelerated Graphics Port (AGP) - or a switched connection between processor and peripherals - used by SGI in its Octane series and in a more limited way by Sun in some UltraSPARC systems - solve contention and speed problems with greater elegance than a bus system.

Apple will need to look at this approach or find itself once more behind the engineering curve. It will be even more an issue for the speed-sensitive artsy/video-types than for CAD users.

If Apple were the only supplier of PowerMac systems, things would be

grim. Single-source products simply have not done well. Apple moved to correct its long-practiced error some years ago; recent trade shows, both Mac-specific and general, have shown very serious Macintosh-family machines that compete in price and performance with both Apple's own products and comparable workstation-level systems from both Wintel system builders and traditional workstation builders.

Two companies illustrate the new class of high-end Mac-clone systems: Both feature multi-processor systems ranging from around US\$3,500. to around US\$7,000. The entry-point machines start at less than US\$1,800..

Supermac, now a part of Umax, certainly understands the Macintosh world. The company has been providing superior Mac-peripherals for a decade. The company's Mac-family systems reflect this heritage.

Think good/better/best; Supermac's better-level machines make a good entry-level workstation. The J700 starts with a 604e processor and combines it with 24mb of system memory and a 2.1gb hard disk. The system has a half-megabyte level-2 cache. Expandability is supplied through a PCI bus and ultrafast SCSI. The company supplies 2mb VRAM display adapter and accelerator and installs a fast modem and network connectivity. This is a well-equipped system at a price (US\$1,795 plus monitor) that is comparable to upper-middle end PC family machines, and not likely to involve much compromise for computer-assisted drafting needs.

Supermac's top of the line S900 systems feature 604e processors running at 200MHz, 233MHz or 250MHz, with 32mb of RAM and a 2.1gb hard disk. The S910 systems use Daystar technology to add a second 604e 250MHz processor, with twice as much RAM and hard disk capacity. A single-processor model starts at US\$2,500., with the most able machine coming in at US\$7,000.. All these systems come with more PCI slots, SCSI and high-resolution true-color display hardware sporting 8mb of VRAM.

There are no compromises in the Supermac systems, but Daystar takes this technology further still. Daystar sells more or less barebones systems with up to four PowerPC 604eev RISCs on an integrated motherboard, in a case with a CD-ROM drive and a mouse. You add your own memory (up to 1,500mb), hard disk, display hardware and keyboard. These systems are sold through Mac-integrators, a list of which is available from the company's website. These systems are complex enough that you want an integrator to do the final assembly. You want to know where that integrator lives, and to remind her or him of that knowledge.

Companies Mentioned:

Apple Computer
www.apple.com

SuperMac/Umax
www.supermac.com

Daystar
www.daystar.com

Daystar's price for a dual-225MHz processor system is US\$4,000 - plus the cost of the memory, hard disk, display system and keyboard, say, another US\$2,500 and up. The base-price for the four-processor box is

US\$6,500..

CAD increasingly requires muscle, as more advanced forms of modeling and graphical walk-throughs become the norm. PowerMac systems from Apple and its licensees can deliver that muscle at prices competitive with both Wintel workstations and workstations from traditional vendors. There are some issues:

Other vendors are exploring bus-less technology for some kinds of peripheral interfacing; Apple and its licensees need to be on top of this. PowerMac market share is relatively small; this is not a strong incentive for software vendors. Nevertheless, PowerMac machines from a variety of sources are a viable alternative for the foreseeable future. CAD users who elected to use Macintosh systems can be comfortable with that decision.