

Atari Falcon030 is Here!

New Computer from Atari Defines "Personal Integrated Media"

By John B. Jainschigg

ON SEPTEMBER 23RD, FOLLOWING a lavish press reception at the Copley Plaza, Atari demonstrated its new Atari Falcon030 computer—flagship of an exciting new line of low-cost, high-performance computers incorporating a state-of-the-art digital signal-processor (DSP) on the motherboard—to a special meeting of the Boston Computer Society. Following on the heels of the massive European premiere, staged a month earlier at the Düsseldorf AtariMesse, the BCS event completes the process of introducing Atari Falcon030 to the world public.

In both venues, audience response was predictably enthusiastic. Numerous outbursts of spontaneous applause gave indication that Atari Falcon030's debut will be remembered as a watershed event in the history of consumer electronics.

With its announcement of the \$799 Atari Falcon030, Atari has boldly reasserted its claim as personal computing's price /performance leader. Perhaps even more important, Atari had thrown down the glove to competitors by proposing a powerful, new standard for marketing Atari Falcon030's innovative multimedia technology to consumers: Personal Integrated Media.

Personal Integrated Media

Though the computer industry's cur-

rent rage for multimedia computing has made inroads in a few narrow professional markets, consumers have largely ignored the phenomenon. To explain this reluctance, most computer makers cite the prohibitive cost and complexity of present multimedia hardware and software solutions. But this, said Atari President/CEO Sam Tramiel, in his opening remarks, is just one part of the problem.

Contrary to industry speculation, Tramiel said, consumers are very quick to understand the advantages of multimedia for entertainment, education, and at-home productivity. But their expectations for multimedia computing are much higher than most computer manufacturers realize, and for a very simple reason.

"A majority of families now own at least one color TV, and many own VCRs, video cameras, and CD players." Tramiel noted. "This technology is very advanced: large screens, picture-in-picture display, remote controls, and programmability are common features. So as far as consumers are concerned, any computer that purports to handle multimedia must offer the same or better media quality—across the board—as these 'ordinary' products. That means TV-quality or better video, and CD-quality or better audio.

"Nor do consumers think that these

features should be expensive," Tramiel continued. "People say, 'if I can get a CD player or VCR for \$199, and a color TV for \$300, why shouldn't I get the same quality audio and video in a computer that costs less than \$1,000?' " Atari's research further demonstrated that consumers would expect multimedia systems to offer "instant gratification." Crucial features must be built-in, software must be engineered for ease of use, and applications must directly address people's personal goals. Atari developed the Personal Integrated Media model, and designed the Atari Falcon030, in response to these conditions.

Designed for Personal Integrated Media

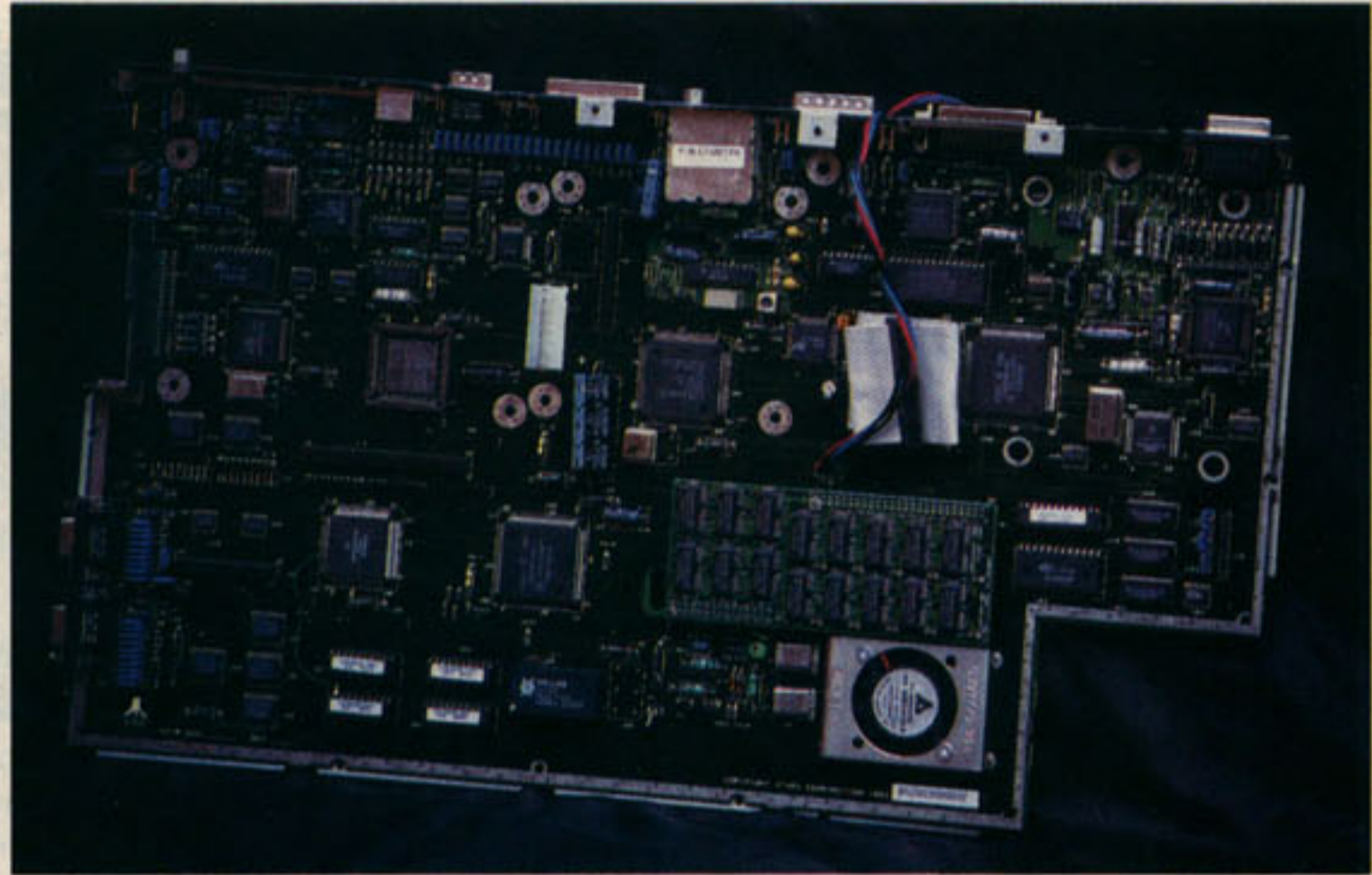
Following his introduction, Tramiel ceded the floor to Atari Falcon030 design chief, Richard Miller, who proceeded to explain some of the new computer's innovative features. Only at the most superficial level, Miller said, could the Atari Falcon030 be described as a "souped up ST or TT."

He said that while retaining 100% compatibility with existing hardware was a high priority of the almost three-year design effort, incorporating the features required by Personal Integrated Media meant that the basic ST/TT hardware had to be completely redesigned. Atari Falcon030's architecture is based

around four independent, functionally-integrated processors: the 16 MHz 68030 CPU and 33 MHz 56001 DSP processor, both produced by Motorola, and custom DMA and BLITTER chips, developed by Atari, which share access to RAM and other system resources, simultaneously. The Atari Falcon030 chipset contains approximately five times the number of transistors as the original ST. Overall, Atari Falcon030's bus bandwidth exceeds the ST's by a factor of ten, processing power by an order of magnitude.

Part of the Atari Falcon030's increased performance is attributable to use of the 68030, a true 32-bit processor that offers on-chip demand-paged memory management, features separate instruction and data caches serving a pipelined architecture, and communicates with the system via separate address and data buses, maximizing throughput. The Atari Falcon030 will also accept an optional math coprocessor, and full MS-DOS/Windows compatibility can be obtained by plugging a third-party 80286 or 80386 processor card (now being produced in Europe and due in North America by January 1st) into an internal slot.

Atari's custom direct-memory-access



(DMA) chip provides high-speed transfer of data between memory and peripherals, independent of the CPU. A high-performance SCSI II peripheral interface is supported, allowing "plug and play" attachment of industry-standard hard drives, DAT units, and other hardware. Atari Falcon030 can accept a high-speed IDE internal hard drive as well. The combination of DMA coprocessor, SCSI II, and IDE gives the Atari Falcon030 the ability to move large amounts of data to and from mass storage, very quickly—

essential for the transparent recording and playback of high-fidelity audio and video data.

Atari's redesigned BLITTER manages video memory at over 60 million pixels per second. Its bit-block-transfer functions permit smooth animation, screen redraws, and other special effects while running in parallel with the 68030. Atari Falcon030 video is Super VGA compatible, offering 256 colors in 640 x 480 resolution, as well as a 16-bit "truecolor" mode (with optional overscan for video) in which each pixel is imaged by 16 bits of RAM (5 bits red, 6 bits green, 5 bits blue). An Atari Falcon030 screen can thus contain up to 65,536 ($2^5 \times 2^6 \times 2^5$) colors, simultaneously, drawn from an overall field of 262,144 (64^3) RGB combinations. A broad spectrum of simultaneously-available colors is crucial for the accurate representation of video which, though essentially a low-resolution medium, gains enormous quality by subtle color variation. True-color is also vital for WYSIWYG 4-color desktop publishing and high-quality computer graphics. In the latter case, it is likely that Atari Falcon030's full color bandwidth will be exploited transparently by Personal Integrated Media software for fine-shading, antialiasing, "liquid media," and other effects.

Atari Falcon030's video system can

Personal Integrated Media

Personal Integrated Media is the logical evolution of multimedia. Just as the printing press made written material generally available, personal integrated media will make today's information widely available. Not only will individuals be able to freely—and interactively—manipulate traditional computer data such as text and graphics, they'll also be able to manipulate information dependent on synchronization: time-base data such as video, audio, animation and telecommunications. And those capabilities will all be integrated into a single, ready-to-use unit. We'll be able to create our own home videos integrated with text and music. We'll be able to record ourselves singing the lead vocals to our favorite rock 'n roll classic with the original musicians playing along—or we'll add a timpani solo to our favorite opera. We'll be able to create performance art in our living rooms, narrate and score the family photo album, create a visual family tree, keep a video journal of the places we've visited, play an adventure game set in the house in which we grew up. The opportunities for personal expression, entertainment and education are unlimited.

drive both monochrome and multisync monitors, and output directly to NTSC video monitor, VCR, TV, or existing Atari monochrome and color monitors such as the SC1224 and SM124. Frame output timing can be locked to an externally-produced sync signal for high-quality genlocking. Screen output can thus be recorded directly to video tape, either in realtime, or frame-by-frame, for animation, rendering, titling, and video-editing applications. An inexpensive enhancement will permit the Atari Falcon030 to accept, display, modify, and store input directly from a video camera or VCR.

DSP Magic

Atari Falcon030's most unique component, said Miller, is its Motorola 56001 digital signal processor. The 56001 DSP is a single-chip engine, capable of performing 96 million operations per second. Its job, in summary, is to analyze and transform analog problems into digital answers.

What this may mean depends on the requirements of a particular Atari Falcon030 application. At the simplest level, the DSP's enormous bandwidth gives Atari Falcon030 the ability to record and play back up to eight channels of 16-bit digitized sound at rates up to 50 kHz. Atari Falcon030's sound system thus exceeds the oversampling margin and quantize specs of most commercial CD equipment.

The DSP's programmable effects subsystem can be used to apply equalization, delay and reverb, distortion, phasing and flanging, compression, surround sound, and other effects to incoming or outgoing audio data. Atari Falcon030 will be shipped with an application called Audio Fun Machine, demonstrated at BCS by Bill Rehbock, which lets you plug in a microphone or other audio source and apply a range of digital effects to the signal. Professional audio applications may employ the DSP to enhance audio tracks with "aural excitement," "harmonizing," "Mega Bass," and other high-end special effects,

previously requiring expensive, dedicated hardware.

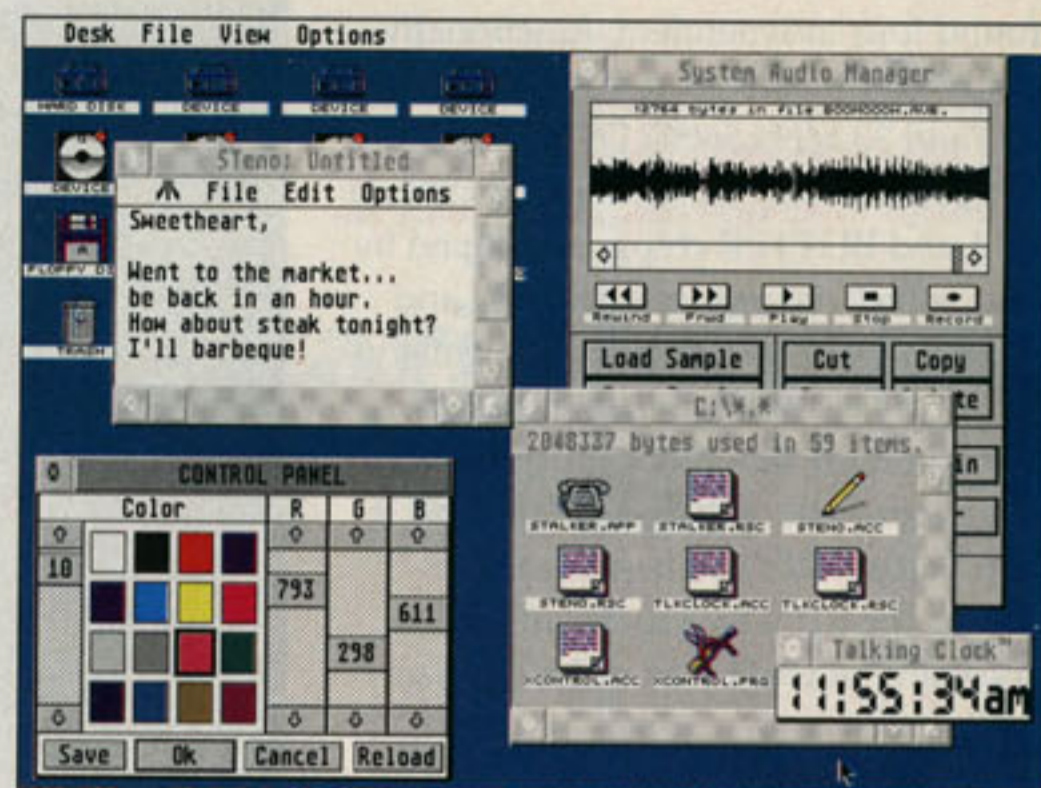
The Motorola DSP can analyze a signal in realtime, using Fast Fourier (FFT) and LaPlace transform techniques. Likely applications include frequency shifting and pitch-to-MIDI conversion, voice recognition and high-quality text-to-speech conversion are sure to follow.

Realtime signal analysis also permits the DSP to function as a high speed fax/data modem, requiring only a simple connector to the DSP port to adapt to phone line requirements. Atari Falcon030 is thus gifted with impressive telecommunications capabilities, built right in.

The DSP's math capabilities also extend to formal operations. Its built-in array processor can perform matrix transformations at extremely high speed, in parallel with Atari Falcon030's CPU. Array-processing has obvious implications for 2-D and 3-D graphics, and animation.

Perhaps most exciting, the 56001 DSP can be used to compress and uncompress data "on the fly." This feature will powerfully enhance Atari Falcon030's ability to capture and replay long-running video clips at broadcast frame rates, and can also be employed in telecommunications, voice mail and audio recording, and still-imaging applications. Both "lossless" and "lossy" protocols can be employed, so compression can be fine-tuned to emphasize data-fidelity or compression-efficiency, depending on the requirements of a particular application.

According to Miller, although the Motorola 56001 DSP is currently used in high-end NeXT and Silicon Graphics workstations, Atari Falcon030 is the first consumer-priced computer to employ



The Atari Falcon030 sports a new and much improved desktop—full color animated icons are just the tip of the iceberg. Look for new applications as well—System Audio Manager for example.

the component, and the first to provide access to all of its advanced features. Because Motorola also makes the Atari Falcon030 CPU and is involved in fabricating other key components, the company is making a strong show of support for the machine. Motorola representatives were on-hand for the BCS presentation, and their promotional materials comprise a portion of the Atari Falcon030 media kit assembled by Atari's PR firm, Redgate Communications.

Demonstrated Excellence

Following Richard Miller's remarks, Bill Rehbock and James Grunke took the floor to demonstrate some of Atari Falcon030's capabilities, and show off some of the software that will be bundled with the machine. Atari Falcon030 carries the latest version of TOS in ROM, complete with a newly-enhanced GEM desktop offering animated icons and enhanced color-windowing capability. The machine will also likely ship with MultiTOS, Atari's new, pre-emptive multitasking operating system (for a preview of MultiTOS, see Atari Explorer, July/August 1992, page 6), as well as a vector-font-management package.

Additionally, eight complete applications will ship with the machine. These include D2D, a stereo, single-channel

direct-to-disk recording package, and Audio Fun Machine, a simple interface to the 56001 DSP's effects-processing system. Both these audio applications were impressively demonstrated by Bill Rehbock, during the BCS presentation. Grunke, in turn, demonstrated the Atari Falcon030's conventional music capabilities, driving a MIDI-interfaced Korg M1 music workstation from Steinberg's Cubase sequencer. He also reminded the audience that Atari Falcon030's digital audio facilities are completely compatible with Steinberg's eagerly-awaiting digital recording/sequencing package, Cubase Audio, expected in the first quarter of 1993.

A New Commitment

With the release of Atari Falcon030 and the Personal Integrated Media stan-

dard, Atari has taken a bold step towards reclaiming a significant portion of the committed, low-end computing market, both in America and abroad. But the Atari Falcon030/Personal Integrated Media initiative represents more than just new hardware and a nifty marketing angle. According to Sam Tramiel, Atari has taken a long look at its recent history and decided to make some fundamental changes in the way it supports users and dealers. First on the agenda is the creation of a new customer-service division, accessible by 800-number, which will stand ready to answer questions, direct users to dealers, and provide other timely information. A national service infrastructure will shortly be in place. And insiders suggest that Atari may soon announce the formation of a direct-marketing division, to

speed access to new hardware for customers, nationwide.

As the Atari Falcon030 release draws closer, Atari is expected to begin to mobilize its newly-acquired marketing muscle—in the form of Redgate Communications and an as-yet-unnamed advertising agency—to garner substantial exposure for the new system. At the same time, some thirty third-party manufacturers are readying Atari Falcon030 hardware and software products for release. Look for hands-on reviews of Atari Falcon030, and breaking reports on exciting new Personal Integrated Media software, in coming issues.



+

HiSoft
High Quality Software

=

Power Software!

Your one stop shop for all your Programming, Editing, Backup, Optimization, Data Recovery, Diagnostics, Repair, Virus Protection, Utility, Personal Time Management, and Entertainment software is **Oregon Research!!**

Diamond Edge - Disk Diagnostics/Optimization

Diamond Back II - Hard Disk Backup

Ultimate Virus Killer - Virus Protection

Knife ST - The ultimate disk sector editor!

Tempus 2 - Lightning fast editor

Harlekin 2 - THE all in one ACC and personal time mangement system!

ProFlight - Tornado Fighter flight simulator

Lattice C - ANSI C developement system

HiSoft C - Learn C the easy way!

Devpac 3 - 680x0 Assembly development system

HiSoft Basic 2 - THE BASIC for the 90's

HighSpeed Pascal - The premier ST Pascal

FTL Modula-2 - Power programming

WERCS - Resource and Icon Editor

and coming soon **True Paint** - The Falcon True Color Experience



Please phone or FAX for upgrade information for previous versions of HiSoft Basic, Devpac 2, Lattice C 5, and Harlekin 1.

*On the Cutting Edge
of Computer Technology*



Oregon Research Associates
16200 S.W. Pacific Hwy., Suite 162
Tigard, OR 97224
Ph: (503) 620-4919 FAX: (503) 624-2940