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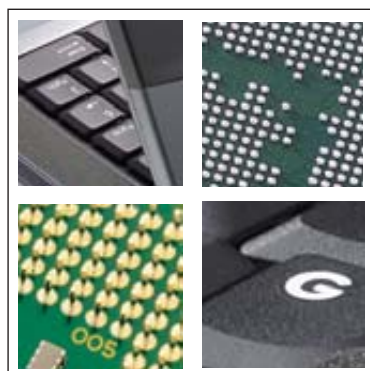
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PDI/DreamWorks stretches the limits of animation by applying 2D cartoon principles to 3D models of Marty the lion and friends in the film *Madagascar*. For more, see pg. 16.





**Phil
LoPiccolo**
Editor-in-Chief

Mining for Gold

Most game players know that few games push the state of the art on more than one major front. But careful observers realize that a surprising number offer at least one golden idea that may be worth including in the next generation of titles.

One such observer is Marc Prensky, author of *Digital Game-Based Learning* and a speaker at the Serious Games Summit, held during the recent Game Developer's Conference. His presentation, 500 Serious Games Later, reported on the progress made in adapting interactive gaming technology for non-entertainment applications.

Prensky identified the most innovative and effective gameplay practices he found while reviewing hundreds of serious games for education, military training, business coaching, public policy instruction, and so on. Here's a summary of the top 10 "nuggets" that he mined from games developed by serious-games pioneers.

10. Put players on edge: In *Angel Five* from Visual Purple, you are an FBI agent in charge of a city threatened by a terrorist attack. As you handle myriad challenges, the game collects facts about you, such as how much information you like to have before making a decision, how quickly you read, and so forth. But instead of adapting itself to suit your style, as many games do, this one does just the opposite, so you do not get what you like to have. The technique is proving to be an effective motivator.

9. Shock players: The game *Insider*, created by PricewaterhouseCoopers to train business auditors, sends you to the future to join the financial team of an intergalactic mining company. Early on, you must decide where the firm should put its money. But the bank you choose goes bankrupt, and you're immediately fired. Like the motivation technique in *Angel Five*, this approach challenges you to go back and try again.

8. Reverse roles: Now being used to train soldiers in Iraq, *Darwars Ambush* from BBN Technologies places you in a convoy on missions in hostile environments and challenges you to avoid ambushes. One clever aspect of the game is that you also play the part of the enemy setting up the ambushes. Reversing roles helps you better understand and counteract your opponent's strategies.

7. Expose the logic: In another military title, *Full Spectrum Warrior* from THQ, you take charge of two infantry squads in an urban war zone. What's unique about the game is that when your troops make unexpected moves, you can query them, and they will explain their actions. Making the game AI available helps you better understand the effects of your decisions and commands.

6. Make games adaptable: *Strategy Co-Pilot* from Imparta helps you learn management skills as you negotiate stress-inducing business situations. The novel concept here is that you are given a coach that adapts to your skill level. You can manually set the level of coaching to any level you wish, simply by moving a slider. But the system will keep track of your play and, if you do poorly, send in the coach to start offering advice.

5. Allow customization: *Objection* from TransMedia, a game that helps lawyers decide when to make objections during trials, has been so well received that attorneys can earn continuing legal education credits in many states for playing it. During simulated trials, you must decide which questions directed at witnesses are not allowable. If you're right, the judge sustains your objection. If you're wrong, the judge gets annoyed, and an explanation of the correct answer appears. The added value of the game is that it is based on

Identifying and expanding on novel techniques may be the most effective way to advance the art of gaming.

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4. Balance agendas: The nonprofit group HopeLab has developed a game called *Re-Mission* for young adults with cancer to help educate them about their disease and about ways of fighting it. The unique problem they solved was to balance the agendas of the various parties involved in the process to create a richer, more realistic game. Taking into account conflicting points of view can add a new dimension of complexity and realism to a game.

3. Seek objectivity: The game *Eyewitness—Nanjing Massacre*, created by students at Hong Kong Polytechnic Institute, simulates one of the most tragic moments in Chinese history: the 1937 Japanese invasion of Nanjing, China, which resulted in the deaths of more than 300,000 civilians. Aimed at memorializing the reality of the tragedy, the first person shooter-style game immerses you in the middle of the violence, and arms you with a camera instead of a gun, so you can serve as an objective witness. Challenging people in similar ways to be as objective as possible may prove useful in other gaming simulations.

2. Make the weapon the goal: In yet another variation of the shooter genre, *Typing of the Dead* from Sega forces you to rely on your typing skills to kill hideous zombies—borrowed from the pop-

ular *House of the Dead* games—before they kill you. Like typical tutorial games, *Typing of the Dead* includes drill modes and multi-player options, but here your keyboard input is not a means to an end, but the end goal itself. There may be any number of input devices, beyond the keyboard, that could similarly be adapted to drive other kinds of entertaining simulations.

1. Incorporate biofeedback: One type of input device that could be more widely adopted by games may be the human body itself. Perhaps the most innovative example of this can be found in *The Journey to Wild Divine* from the Wild Divine Project. Marketed as an “inner-active” computer adventure, the game combines meditation techniques with biofeedback technology to help enhance “mind-body wellness.” Fingertip sensors monitor your heart rate and skin response as you take a guided trip to the land inside of your mind. Other biofeedback games are being developed that use brain waves to control simulations.

Not every new game can extend the state of the art, even slightly. But given that the industry has continued to expand at an accelerating rate, titles that offer novel concepts for creators of both serious games as well entertainment-oriented games, may be the rule rather than the exception. And borrowing the best of these techniques, and improving on them, may be the most effective and efficient way for game developers to stay a step ahead of the competition. ■■

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VIDEO

PRODUCTS

NewTek Introduces TriCaster

Maker of 3D animation and video solutions, NewTek has unveiled its TriCaster production and presentation tool.

TriCaster is a portable live production suite for the creation and delivery of live video presentations. For producing professional-quality video, TriCaster enables the combination of live and recorded video sources with titles and graphics. And users have the option of simultaneously streaming the live presentation to the Internet or a corporate intranet, outputting to video and a high-resolution (XGA) video projector, and recording as digital video

on TriCaster's internal media.

TriCaster's networking technology permits the use of PowerPoint content, video, graphics, and animations from virtually any computer on the local network. Its keying aids users in mixing graphic elements, including full-screen animations, with live video, whereas integrated, real-time video editing as well as hundreds of templates and dozens of video transitions simplify and help speed work flow.

Less than one cubic foot in size and



weighing 10 pounds, the new system is compact enough to fit into a backpack. TriCaster is scheduled to ship by the end of this quarter at a price of \$4995.

—Courtney E. Howard

DESIGN

PRODUCTS

Adobe Ships Creative Suite 2

Adobe Systems has upgraded its Creative Suite to Version 2, and added a number of new tools in the process.

Adobe Creative Suite 2 Premium Edi-

tion comprises Photoshop CS2, Illustrator CS2, InDesign CS2, GoLive CS2, and Acrobat 7.0 Professional, as well as Version Cue CS2. New to the product bundle

is Adobe Bridge, a visual file browser that integrates with each program in the suite, offers a choice of views for organizing and previewing files, and provides access to Adobe Stock Photos, a new stock photography service offering royalty-free imagery from Photodisc by Getty Images,

Comstock Images by Jupitermedia, Digital Vision, and others.

Creative Suite Premium Edition is priced at \$1199, whereas the Standard Edition, which does not include GoLive and Acrobat, costs \$899. Users of Creative Suite and Photoshop are eligible for upgrade pricing (details are available via the company's Web site). Scheduled to ship in May in the US and Canada, Adobe Creative Suite 2 is compatible with Mac OS X Versions 10.2.8 through 10.3.8, Microsoft Windows 2000 with Service Pack 4, Windows XP with Service Pack 1 or 2, and Java Runtime Environment 1.4.1. —CEH



MIDDLEWARE

PRODUCTS

AGEIA Presents Physics Technologies

AGEIA Technologies has upgraded its NovodeX Physics SDK middleware physics engine, as well as unveiled the new PhysX chip.

For the creation of dynamic physical environments on major game platforms, the NovodeX Physics SDK is a multithreaded/asynchronous physics API designed to benefit the game development process with in-



creased realism and interactive gameplay. It includes a rigid-body solver, collision detection, real-time fluids, and smart particle systems. The NovodeX SDK supports multiprocessor PCs and gaming systems, platforms with hardware physics acceleration, and AGEIA's PhysX chip, reported to be the industry's first physics processing unit (PPU).

The PhysX chip, AGEIA's first release in the new category of PPU semiconductors, is a dedicated physics chip for use in next-generation game platforms. Its ability to perform physics simulations in real time ensures faster responses to gamer actions and pervasive interactive reality environments. Offering game developers hardware-accelerated physics, the PhysX chip features universal collision detection, rigid-body and soft-body dynamics, fluid dynamics, clothing simulation, soft-body deformation with tearing, smart particle systems, and brittle fracturing. —CEH

COMPOSITING

PRODUCTS

Autodesk Unleashes Toxik

Autodesk's latest release, Toxik, is compositing software designed for the creation, management, and sharing of feature-film visual effects.

Targeted at film studio and postproduction professionals, Toxik sports a collaborative engine that automates data management and simplifies complex work flows in which multiple artists contribute visual effects to a single scene or production. At the same time, its node-based procedural compositing system provides advanced animation capabilities and tracking, keying, color correction, and rotoscoping functionality.

At Toxik's core are Ultra High Resolution Interaction and High Dynamic Range Imagery (HDRI) technologies, lending to the rapid display and manipulation of large imagery (including 4k, 8k, and 21k+ files). The application also incorporates the company's Suave software renderer, Touch UI gestural user interface, and Reaction 3D environment for interactive compositing. Moreover, its modular architecture, API, and Python scripting enable the automation of individual processes and customization of internal work flows.



Demonstrated publicly for the first time at NAB2005 in Las Vegas, Autodesk Toxik 1.0 is shipping now for Microsoft Windows operating systems and is designed to take advantage of Intel-based workstations and Nvidia Quadro FX graphics cards. North American pricing for a single Toxik creative seat, with supporting collaboration infrastructure, is \$9000. —CEH

Correction

In the article "DNA's Disk Storage Ensures Quality Effects for The Aviator" (April, pg. 36), a segment describing the work performed by Digital Neural Axis studio should have included the following information: DNA produced a total of 68 visual effects shots for the film *The Aviator*. Two shots were in the H-1 scene, which re-created Howard Hughes's record-breaking 1935 flight of the H-1 racer. Some of the work included compositing greenscreen footage of two

extras with binoculars onto a background plate already composed of landscape imagery and an RC model of the H-1 plane.

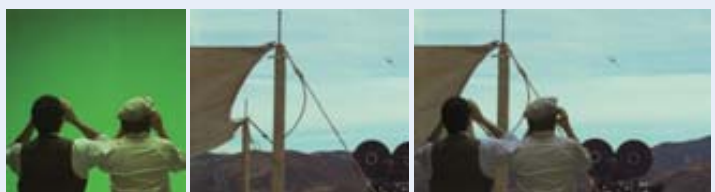


Image ©2004 Miramax Film Corp. and Initial Entertainment Group. Courtesy of Digital Neural Axis.

spotlight

BROADCAST

USER FOCUS

Freeze Frame

Visual effects house Zoic Studios recently “freeze-framed” a surprise ending to a car commercial, called “Green Light,” that illustrates the downside to driving Ford’s new Mustang convertible.

In the spot, a police officer pulls up behind one of the new vehicles stopped at a red light in a frozen *Fargo*-esque landscape. When the light turns green and the car fails to move, the officer steps out of his vehicle into the howling wind and blowing snow, and makes his way to the driver. Behind the wheel of the flashy red convertible is a man, dressed in summer clothing, frozen solid with a huge grin on his face.

To create the spot’s stark, frigid environment, the team used Autodesk Media and Entertainment’s Flame to remove power lines and signage from a live-action plate of the setting, resulting in a simple, ice-blue landscape. And although the action was filmed in Canada during the winter, more snow was needed to blanket the contrived scene. So Zoic used Flame to composite practical snow elements from its library.

As a contrast to this blue-white environment, a separate



color pass was used for the car and the driver’s bright Hawaiian-print shirt, to bring out the red hues. However, this meant rotoscoping the car from all the scenes so the color contrast would pop in the HD spot. For additional color contrast, the group conducted a color pass for the master environment.

To achieve the perfect look for the driver, the group mixed and matched film takes and touched-up the scenes. “For example, the director liked the actor’s grimace from a certain take, so we isolated and composited his mouth onto his face from another plate, then painted his lips blue and added frost to his glasses and arms,” explains John Shirley, visual effects supervisor at Zoic.

To help the actor remain frozen in place, the artists added still elements onto a stabilized film plate of the driver that was separated from the active background plate. This allowed the group to eliminate environment reactions, such as when the actor’s hair blew in the wind. —Karen Moltenbrey

BUSINESS

USER FOCUS

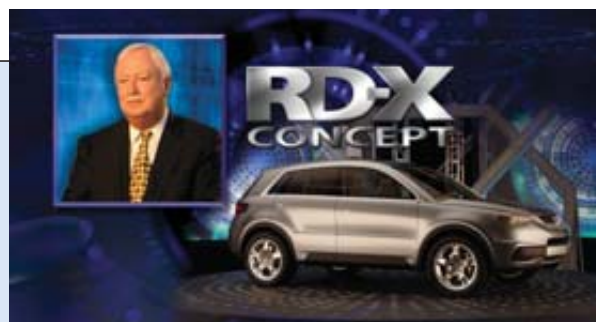
Suped-Up Presentation

How does a corporate vendor show facts and figures using a PowerPoint presentation and still capture the audience’s attention amid the “eye candy” at a large industry trade show?

That was the dilemma facing Acura, Honda Motor Company’s luxury car division, at the Detroit Auto Show a few months ago. There, automobile designers displayed their latest designs and concepts, hoping to make a positive impression on the world press covering the event. Acura, touting technology innovation in its cars, wanted to reinforce this image while presenting itself and its ideas. To this end, the manufacturer requested that its events agency, Martin Brinkerhoff Associates (MBA), help “supe up” its media presentation.

MBA met this challenge by supplementing Acura’s PowerPoint screens with high-def 3D imagery and video. Using Instant Effects’ OfficeFX Professional presentation application, the agency merged dynamic 3D animated backgrounds and 2D type with pre-shot product video and live speaker video, which were all projected onto a large screen.

“This capability allowed us to have an animated background behind what is typically a static presentation,” says Ruthm Gill-



man, MBA art director. “Most of the images, naturally, were of the vehicles, but we also placed logos and photos of people and buildings, which when blended with the 3D backgrounds gave the content a broadcast look, with its constant motion.”

MBA created the 3D images in-house with Autodesk Media and Entertainment’s 3ds max and imported them into OfficeFX Professional. When creating the PowerPoint slides, the MBA team added JPG files in the usual manner, but by also using soft-edged, semi-transparent PNG files, was able to merge the still imagery with a moving background.

While the HD graphics and video were more compelling than SD imagery, the large file sizes required the use of desktop workstations rather than laptops. “I don’t know if this presentation gave the company a leg up on the competition,” says Gillman, “but it made the graphics interesting.” —KM



Screen image courtesy of Aaron Reid

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spotlight

MARKET OUTLOOK

AMD Makes a Stand

In the past decade, workstations have undergone a sweeping transformation from proprietary systems to PC-derived machines. Intel has benefited most from this transition, as the dominant PC platform vendor ships its processors and chipsets in more than 90 percent of today's workstations.

But does this mean that the game is over? That the rest of the industry is letting Intel have the market all to itself? Maybe not, as AMD, for one, has moved into a solid position to vie for a bigger piece of the workstation pie.

Last year, AMD won respect as a genuine technological threat in the marketplace, although big sales figures haven't yet followed. In fact, by the end of last year, AMD had only accounted for 1 percent of workstation shipments (see accompanying graph). But this is shaping up to be the year AMD could finally make a dent in Intel's market share.

AMD has competed in the market for many years, but never had a chance to seriously threaten Intel. To be successful against Intel, a vendor must have a nearly perfect game plan, and execute it flawlessly. And for the most part, AMD didn't and couldn't, at least not in the workstation space.

To make big OEMs and workstation buyers stand up and take notice in the nobody-ever-got-fired-for-buying-Intel world, AMD had to be significantly different. And more than that, it had to have a strong argument for technical superiority.

That argument came in 2003 in the form of Opteron, AMD's flagship processor targeted at workstations and servers. Hailed by analysts and technology enthusiasts alike, Opteron was a broadside attack aimed at one of the few chinks in Intel's armor—the gap between Intel's Pentium-derived 32-bit Xeon and high-end 64-bit Itanium platforms.

Like Itanium, Opteron delivered 64-bit computing, but did so more gracefully, maintaining 32-bit x86 compatibility, in contrast to Itanium's incompatible instruction set. And with its DirectConnect architecture introducing memory controllers integrated into the processor rather than across Intel's front-side bus, Opteron trumped Intel's Xeon platform.

DirectConnect not only promises lower latency, but memory bandwidth that scales by processor. That advantage can boost performance considerably in dual-processor workstation applications. And combined with high-speed HyperTransport

I/O links, DirectConnect offers demanding professional users a compelling alternative to the Intel architecture.

Digital content creators for film, TV, and gaming are among today's most bandwidth-hungry users. And Opteron workstations hold great potential by providing the highest bandwidth solution we've seen for Nvidia's top-end dual-card SLI graphics targeting both professional and gaming applications. While Intel eventually humbled itself to match AMD's 64-bit-on-x86 solution last year, DirectConnect's memory and I/O performance advantages remained generally intact at the close of 2004.

Despite such promise, 2004 was not a watershed year for AMD. Microsoft's 64-bit Windows slipped, leaving Linux (and later Solaris) as the only showcase for AMD's 64-bit capabilities. And AMD needed Tier 1 OEM support.

Now, the prospects for Opteron have improved dramatically. Fujitsu-Siemens, IBM, Sun, and HP have all announced Opteron workstations, and Microsoft is finally on the cusp of releasing 64-bit Windows.

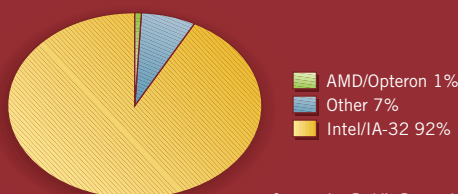
But earlier this year, Intel initiated countermeasures to allay the AMD challenge by aggressively boosting on-chip cache. The company's newest Xeon processor contains 2MB of cache, doubling Opteron's 1MB and clouding AMD's arguments for supremacy in memory performance. Looking ahead, Intel has also announced that the

chipset for 2006 Xeon servers and workstations will provide dual front-side buses and a faster memory interface, mitigating AMD's argument on dual-processor bandwidth scaling.

Moreover, Intel also reportedly plans to go one step further and integrate a memory controller in Xeon and an interface to a common serial interconnect called CSI. If this does come to pass, then Intel will have truly ended the debate on AMD architectural advantages, since the company would have effectively adopted AMD's architecture.

The next two years will be a make-or-break period for AMD in workstations. AMD and its partners are moving forward, and Opteron has gained a foothold. But Intel is moving quickly to close the gap, so AMD must be as aggressive as ever in 2005 to turn that foothold into meaningful market share. —By Alex Herrera, senior analyst, Jon Peddie Research (www.jonpeddie.com), publishers of the new edition of the JPR "Workstation Report—Professional Computing Markets and Technologies."

Tier 1 Workstation Market Share by Platform



Source: Jon Peddie Research

AMD's 2004 market share (above) could rise significantly in 2005.



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The Avid-Pinnacle Puzzle

By Jeff Sauer

For someone who's been following the digital video industry for a long time, Avid's recent agreement to purchase Pinnacle Systems feels like a blockbuster. These are two of the biggest competitors in the business, and it's video-editing's equivalent to Daimler-Benz buying Chrysler or HP buying Compaq. On the surface, it's a merger of editing product lines that might suggest a dramatic reduction in customer choices. But there's more to the story.

First of all, the digital video industry doesn't make mass-market cars or computers, but rather specialized tools for a specific craft. And more significant, digital video may be a growth industry, but it's not growing fast enough to support all of its pioneers.

Indeed, over the past few years both Avid and Pinnacle have done their share of shaking up the industry by gobbling up other companies. For example, Pinnacle's current product line boasts technology and products acquired from once well-known companies such as Truevision, Deko, Minerva, Miro, Puffin Design, Fast, Dazzle, Hollywood FX, and Steinberg Audio. But Pinnacle's resale of Steinberg to Yamaha late last year hinted at the financial strain of a company no longer hitting financial goals.

The good news for the digital video community is that Avid and Pinnacle are actually a pretty good fit, at least in most areas. The two companies have already been partners for a lot longer than they've been true competitors. In fact, Truevision was the OEM supplier of Avid's editing I/O hardware. Also, Pinnacle's Aladdin and Genie FX hardware were the first real-time effects preview engines for early Avid Media Composers. And more recently, when Avid was strapped for cash, Pinnacle bought Avid's Sports Division, which now boasts an impressive list of customers—including major and minor league franchises and NCAA sports programs in just about every major sport—and a healthy revenue stream.

Avid's Pinnacle Products

At the higher end of the professional video production market, the Pinnacle acquisition is likely to be more of a boon than a diminution of competition and choices. Avid dominates the higher end of the editing market with products like Symphony and Avid DS Nitro, while Pinnacle's high-end focus has been the broadcast market, featuring live production and play-to-air solutions such as the Deko live-production titler and the MediaStream and Thunder on-air digital servers.

There is some overlap, of course, between Avid's iNews and Pinnacle's Vortex news editing systems. Avid's AirSpeed and Pinnacle's Palladium Media Servers both handle ingest and playout tasks. But Avid's Unity can add proprietary shared storage solutions to both, and Pinnacle's MediaStream is a standalone play-to-air server that can use either as a client. Since many Avid customers already use those

Pinnacle products in conjunction with

Avid editing stations, putting them under one R&D roof should only enhance the shared metadata and the facility for working together. It would also streamline user support for an entire production infrastructure.

When it comes to editing, there is greater overlap, but the two companies have historically approached video editing from opposite ends of the spectrum. While Avid has offered integrated hardware/software turnkey systems to the higher end of the video editing strata, Pinnacle, particularly through the acquisition of companies such as Miro and Truevision, championed an open-system approach that paired more affordable off-the-shelf hardware with editing software such as Adobe's Premiere. It wasn't until Pinnacle's 2001 acquisition of Fast Electronics that the company had a video editing software interface to compete more directly with Avid core business.



Jeff Sauer

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Can Avid integrate Pinnacle's technology and broaden its family of products?





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The corporate/independent/prosumer sector of the business is most at risk from a merging of product lines. Liquid Edition is Pinnacle's software-only product, and it arguably competes with Avid Xpress, and for less than half the price. Edition does offer a unique, all-in-one approach that allows users to author DVDs straight from the video editing timeline, and that could save it from the chopping block. With an interface that won't be mistaken for Avid's higher end interface, and thus presumably won't take too much business away from it, Liquid Edition could nicely broaden Avid's product line into a more affordable category.

However, that would be a delicate balancing act for Avid to pull off in a market sector that has historically been an enigma to a company whose bread and butter is the higher end. Pinnacle's hardware/software Liquid bundles—Liquid Blue and Liquid Chrome—present an even trickier challenge if they are to remain viable in a product portfolio that already

includes Avid Xpress Studio and Media Composer Adrenaline. It's probably more likely that those technologies will get folded into Avid's current products.

My First Avid

The most intriguing piece of this new Avid-Pinnacle picture may be a product that today's content creation professionals will probably never use: Pinnacle's consumer-oriented Studio editing software. Today, Studio dominates the Windows-based consumer editing space and will immediately give Avid both a strong reputation and established distribution and sales channels that Avid can adopt without much change. And, as with the reclamation of the Sports Division, Studio should immediately yield Avid revenue.

In the longer term, Studio could be critical to establishing the Avid brand among aspiring video professionals. Attracting consumers while they are young has a well-documented strategy for two of Avid's biggest competitors moving forward. Sony's My First Sony campaign put the trusted Sony brand in the hands and minds of young people, some of whom grow into Sony broadcast and editing products. Apple's iMovie and iDVD also allow young people their first taste of success working with video. And Apple's Final Cut Express and professional Final Cut Pro are logical stepping stones for maturing videomakers.

Over the years, one of Pinnacle's main strengths has come in its ability to share technologies across its entire product line. For example, Pinnacle mimicked the easy-to-use Studio interface when it built the Vortex editor for fast-paced newsrooms. And it put professional Deko titling technology in Studio in order to give consumers the good-looking titles they'd expect from television. Avid's acquisition of Pinnacle gives it as broad a product line as it's ever had and the ability to share technology across its products. If it can pull it off, that could make the new Avid very exciting to watch. ■■

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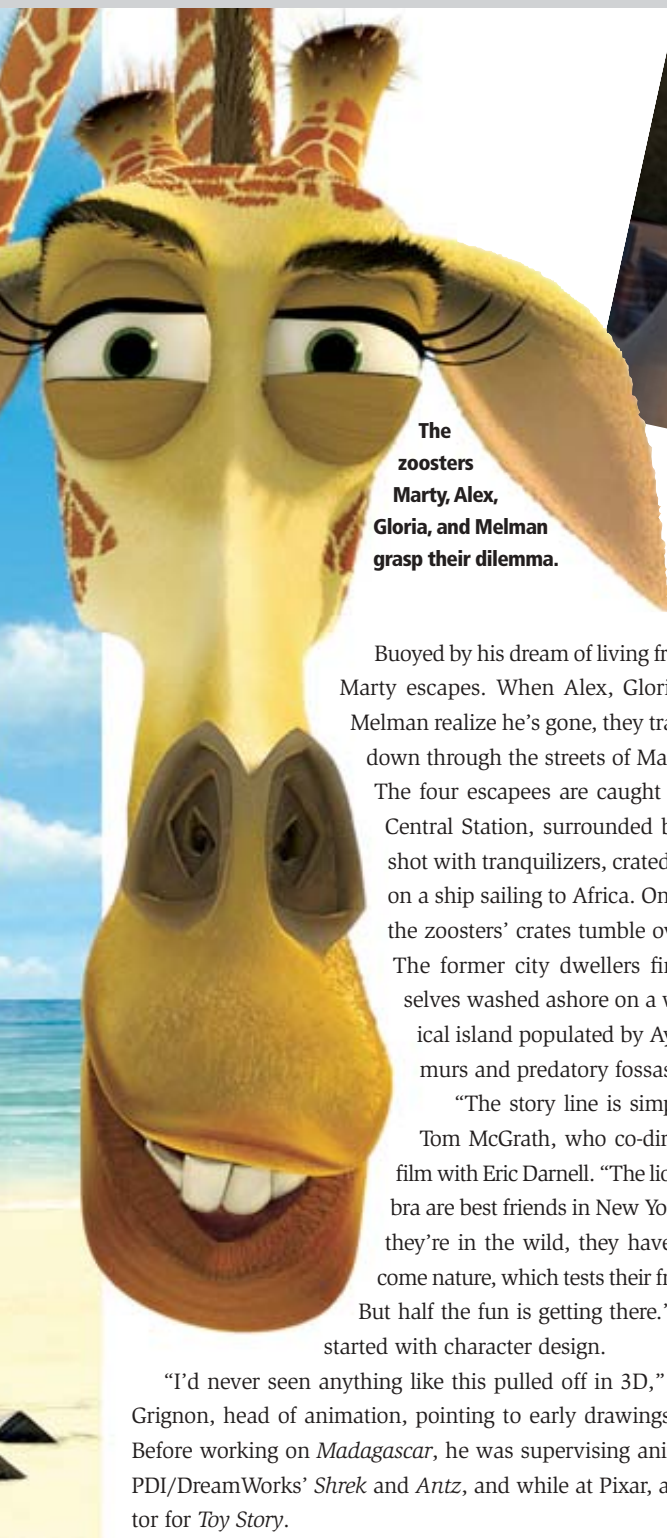
f you believe the startling success of 3D animated features forevermore pushed 2D cartoon-style animation out of full-length films, you haven't been paying attention. The 'toons have snuck back—inside 3D films.

Last year, for example, the CG characters in two features performed some flashy 2D moves. The fish in DreamWorks Animation's *Shark Tale* acted in a cartoony manner (see "Reef Madness," October 2004, pg. 14). The superheroes in Pixar/Disney's *The Incredibles*—Elastic Girl, in particular—stretched 3D models beyond anything on-screen before (see "Hero Animation," November 2004, pg. 18). And now, with *Madagascar*, PDI/DreamWorks has ratch-

eted up the action by freely applying 2D animation principles to all the stars of its 3D film. *Madagascar* is a 3D 'toon.

Four years in the making, the comedy feature—which stars Ben Stiller as the voice of Alex the lion, Chris Rock as Marty the zebra, David Schwimmer as Melman the giraffe, and Jada Pinkett Smith as Gloria the hippo—opens in a daydream. Marty is swinging on a vine while an instrumental version of "Born Free" plays in the background. He somersaults over a canyon and wakes up to the sound of voices shouting, "SURPRISE!" He's in New York City, in the Central Park Zoo at his birthday party.

By Barbara
Robertson



The
zoosters
Marty, Alex,
Gloria, and Melman
grasp their dilemma.

Buoyed by his dream of living free, Marty escapes. When Alex, Gloria, and Melman realize he's gone, they track him down through the streets of Manhattan. The four escapees are caught in Grand Central Station, surrounded by police, shot with tranquilizers, crated, and put on a ship sailing to Africa. On the way, the zoosters' crates tumble overboard. The former city dwellers find themselves washed ashore on a wild tropical island populated by Aye Aye lemurs and predatory fossas.

"The story line is simple," says Tom McGrath, who co-directed the film with Eric Darnell. "The lion and zebra are best friends in New York. When they're in the wild, they have to overcome nature, which tests their friendship. But half the fun is getting there." The fun started with character design.

"I'd never seen anything like this pulled off in 3D," says Rex Grignon, head of animation, pointing to early drawings of Alex. Before working on *Madagascar*, he was supervising animator on PDI/DreamWorks' *Shrek* and *Antz*, and while at Pixar, an animator for *Toy Story*.

Xtreme Style

"For me, the question was whether we could find a unique animation style that fit the production designs," Grignon adds. "The characters had to do big, broad poses, every pose needed to have personality and attitude, and the animation had to be very snappy. These are traditional animation tricks, but there was no touchstone for what we wanted to do in 3D. We knew we'd have to distort the models, bend them the wrong way, stretch their torsos, squash them. It was scary."

For example, Gloria, a hippo with a big belly and short little legs, stretches twice her length, touches her toes, does karate kicks



At top, animators
matched the 3D zoosters'
graphic design with
snappy 2D-style animation. The
incurrable penguins (at left) were the snappiest.

over her head, lies down on her back, and moves her belly without moving her hips. Marty the zebra walks on all fours and also stands up like a human. Melman the giraffe stops as he walks along and scratches his neck with his leg.

Moreover, all the characters were drawn in 'toon style with, as McGrath puts it, "straights against curves." The top of a penguin's wing, for example, has straight lines, but the bottom is curved. "That's easy to animate on paper but hard in 3D," he says, "because when the character turns, it looks bizarre."

"A few years ago, just getting basic animation with 3D was a challenge," adds Darnell, who previously directed the short film *Gas Planet* and PDI/DreamWorks' first CGI feature, *Antz*. "Now, we're pushing the limits. The inspiration for this film was Tex Avery-style classic 2D. It's never been easy to do this in CG."

Just-in-Time Models

PDI/DreamWorks' animation system, which won a scientific and technical Oscar, made it possible. "We've put a lot of investment in the rigging system," says Andy Hendrickson, head of animation production technology. "So, it wasn't 'oh, my god, we have to do this.' It was, 'We finally get to.'"

Rather than mixing discreet shapes, animators control a system in which a character builds its own model in every frame (or, more often, builds only the part that changes). The animators, in effect, sculpt the characters. Once sculpted, the characters are skinned automatically with a mesh made of springs and points that relax the skin over the model.

"This method of animation is a controlled simulation," says Hendrickson. "With other systems, sticking Melman's neck out at a weird angle would take thousands of animation shapes and sculpts to create the poses, and cracks and weird wrinkles in the skin would result." Instead, the software code in this system uses instructions provided by animation controls to build the exterior of the creature. "That is essential for doing squash and stretch with-

●●●● Film

out having rigs coming apart,” he says. “And, the skin is really a skin, an exterior mesh that goes over the creature. It isn’t knitted-together topology.”

Thus, the riggers held the key to creating Madagascar’s characters: They designed a system of animation controls that could move the geometry into the graphic shapes the animators wanted for poses and that allowed extreme motion in-between the poses.

“It was a collaborative effort,” say Jim Mainard, head of R&D. “We had a vision, and the underlying technology is as flexible as a programming language, so basically we could create anything we could conceive. The riggers spent a good deal of time writing scripts and using plug-in libraries to get the shape and motion right.”

The riggers used animation controls themselves, as well, to create a variety of characters for crowds. “We started with two models—one round, one sharp—and we deformed the geometry with animation controls,” says Milana Huang, character TD co-supervisor. “We just applied animation to get many shapes.”

Structureless Structure

For the main characters, the riggers began organizing control systems by first working with the character designers. “We wanted to see how they cheated,” says Rob Vogt, a character TD co-supervisor. “Where they placed the shoulders, how they maintained the arc.”

Adds Huang, “We noticed, for example, that when the faces were squashed and stretched in 2D, they’d lower only the part from the nose down, and raise only the part from the eyes up.”

All told, the animators had between 200 to 300 controls on the faces and hundreds more for the body and hair, organized into macros. Melman’s cheeks could puff out, for example, his mouth could gape open, and his muzzle could move independently from the rest of his head. Animators were able to make major adjustments with

Animators can now have 3D characters perform the types of exaggerated moves that are typically drawn on paper for 2D cel animations but are rarely possible in 3D.



one control, or drill down to control something specific.

Vogt points to his screen where Alex had become, in effect, a stack of seemingly disconnected boxes that represented body parts. “He can be organized in any way the animator wants,” Vogt says. “An animator can move his hips without affecting his shoulders.” Animators see these blocks moving apart when they’re working, and then can push a button to see the character redrawn with its skin stretching to accommodate the movement. The riggers call it goal-oriented regional character posing.

“The main challenges,” Vogt says, “were the extreme ranges of motion. We needed to squash and stretch the faces and bodies, yet maintain the silhouette. It couldn’t look rubbery. The scaling had to be very specific.”

“One trick was to have the character look normal when your eye is soaking it in, but when it moves, to do what serves the animation,” says Grignon. For example, Alex’s arm might stretch and grow huge as he swings it toward the camera, but when he stops, it looks normal again. To help animators, the riggers added procedural controls to handle scaling issues automatically.

“The rigs were super dynamic.” Says Grignon. “We could do anything to any character any time. It was a big adjustment for the animators, but we gave them intuitive controls.”

For example, most CG characters have eyes modeled after human eyes, which have two “corners,” one on each side of the eye, where the lids meet. To help create cartoony expressions, riggers gave animators shutter-style four-corner eyes with lids that could have straight or curved lines. To maintain Gloria’s full belly silhouette, the R&D team created a special deformer that preserved her volume as she moved. And, to make it possible to animate Alex’s “pound cake” fingers, the riggers added automatic scaling because otherwise, the fingers were too thick to bend at the knuckles.

Once it became clear that animation could be as stylized as the character design, the story became zanier and more graphic. When Alex is shot with a tranquilizer dart, he hallucinates a kaleidoscope of graphic shapes. Onboard the ship, the animals are in their crates proscenium-style (in front of the curtain) alone against a dark background. And, the characters could act more like ‘toons.

“We weren’t thinking completely unleashed,” says McGrath, “but we let animation be a character. And the style opened the door to slapstick comedy.” When the zoosters land on the beach, for example, they’re still in their crates. “We asked, ‘What’s the wackiest, funniest way to get Melman out of the crate?’”

Funny Dust

In addition to the characters, some unusual “cast members” played a supporting role: the effects. “The effects told our jokes,” says McGrath. And, Darnell adds, “They had to match the style of the film. We couldn’t have boilerplate effects.”

That doesn’t mean the effects were simple, however. The lighting and surfacing crews handled painting and lighting for environments from urban shots in Manhattan to the Madagascar jungle.





From left to right: Camera moves and performances are approved in rough backgrounds. A matte painting and then layers of jungle rendered from back to front add detail. At right is the final scene.

To help create this complexity, the crew developed a procedural tool to quickly put arbitrary geometry into a layout. “[The tool] had some notion of the distance from one thing to another,” says Hendrickson, “so you could populate a scene with random quantities of things in all sizes and shapes.”

They could, for example, plant a jungle. “We didn’t use comp tricks or cheats for the foliage,” says Hendrickson, “so we created geometry-wrangling tools to define areas of geometry and the levels of detail we’d apply.”

The geometry was necessary because the plants were always moving—such as when touched by a breeze or in reaction to character movements. In one scene, a blast from the ship’s horn nearly flattens 14,000 plants that have four million deforming leaves.

“We basically used non-dynamic deformations,” says Scott Singer, head of effects. Layers of plants organized into a hierarchy were tuned with different levels of motion. Noise shaders created ambient motion, and a deterministic oscillation shader produced a vague sense of character interaction. For more direct character interaction, the crew used a system called “bushwack,” that added high-level deformers. But, if a character needed to interact with a plant, that motion was keyframed by the character effects department.

For crowds, which appear in two-thirds of the sequences, effects animators moved characters using animation cycles and rule-based flocking behaviors, or they moved them on motion paths and sometimes with specific choreography. The crew used displacement maps to dress human characters created by the riggers, but human crowds weren’t the big problem.

“When we started, we could render only five lemurs,” says Philippe Gluckman, visual effects supervisor. Optimizing the fur renderer helped them to handle as many as 50 at a time, as did a rendering trick: They put shells that had same volume as fur around



A new fur shell shader helped render crowds of 500 furry lemurs.



background lemur bodies, ruffled the edges with displacement, and created a fur shell shader that responded to light as if it were fur. A new compositing program helped layer the jungle and, often, as many as 500 lemurs together.

“We weren’t trying for realism,” says Gluckman. “Effects were art directed and choreographed.” Although the studio has an award-winning fluid simulator, the ocean’s motion was keyframed.

“We kept coming back to effects that didn’t use dynamics,” says Singer. “For the ocean, we keyframed the profiles and derived wave geometry from the profiles using curve animation and surface extrusion. It was refreshing for the crew. When we asked what the ocean should look like, instead of hearing, ‘Like water,’ we were told, ‘The ocean is foreboding and lonely.’ Or, ‘The dust is funny.’”

To make funny dust, the crew created spiral shapes with rounded angles—straights on curves. “The shape was used throughout the film,” Singer says. “You see it on characters’ noses, on the ends of logs. So we applied it to the dust. If you look, you’ll also see little spirals in the mist, the smoke from the ship, and spit.”

Spit? Lots of spit. “We have a series of spit takes that we probably overuse, but it was really fun,” says McGrath.

“So many effects tools have been written to solve physics problems,” Singer says. “On this movie we had to throw many of them out. The effects animators would say, ‘How am I supposed to animate?’ The answer was, ‘By hand.’”

In the past, because it was simply too difficult to create 3D models that could be bent out of shape without breaking, animators performed 3D puppets rather than pushed much-loved extremes to convey emotions and sell story points. By removing the limitations that 3D had imposed, PDI/DreamWorks allowed character designers, animators, and effects artists freedom to tell stories in new ways by using a new-old style within a 3D world. ■

Barbara Robertson is an award-winning journalist and a contributing editor for Computer Graphics World.

tempting ~ fate

By Karen Moltenbrey

WildTangent brings
role-playing to the
casual game space

Once upon a time, an evil wizard cast a spell that prevented role-playing games from entering the casual gaming arena. So for years, RPG titles grew in popularity, especially among males, as players created virtual alter egos, gave them certain powers, and sent them on thrilling, magical adventures. Meanwhile, in another realm far, far away, casual games attracted their own loyal following, predominantly among females. ♦ Then, one day, a wise inventor and an adventuresome group decided it was time to break the spell separating the two game genres. After six months of toiling, the small but determined bunch found a solution that once again sealed casual gaming's "Fate," this time by making RPGs accessible to the casual gaming world.



Images © 2005 WildTangent

Later in the month, this fable will become real when online game developer WildTangent unveils *Fate*, a full-size, downloadable, single-player fantasy role-playing game (RPG) geared to the so-called casual player.

While casual gaming is far from new, it is only now becoming visible within the general computer-game industry, no doubt because of its large user and revenue base (see "The Lowdown on the Download," pg. 22). Yet, these games—predominantly puzzle and card titles—are very differ-

WildTangent is entering the realm of online adventure gaming with *Fate*, a downloadable fantasy RPG whose action and graphics are styled for a wide audience.

ent in form and style than those of other genres. Most are fully downloadable from the Internet; therefore, their file sizes tend to be small to facilitate installation. As a result, these titles cost approximately \$20, far less than the \$50 price tag for triple-A PC and console titles. Also, the games in this space do not require a substantial time commitment from players, thus they tend to attract a wider demographic.

While most developers of role-playing games and first-person shooters would think these characteristics extremely odd, it is a formula that has served the casual gaming area well over the years. So why, after "playing" in the casual gaming space

for more than seven years, would WildTangent tempt the market's fate with a mixed-genre title? As WildTangent CEO Alex St. John explains, this type of offering allows the company to push the envelope in casual online gaming by combining the best of both worlds: the lower-priced, compact play of a casual game, and detailed, contemporary 3D graphics and compelling action of a "hardcore" fantasy RPG.

But it's only recently that the casual game market has matured to where it can accommodate more complex graphics technology, higher production values, and richer gameplay than is present in a virtual chess game, for instance. In fact, nearly all the titles in the casual gaming space have been, and still are, 2D. Indeed, they usually have attractive imagery, concedes Stuart Moulder, vice president of WildStudios, the game development segment of WildTangent. But, as he points out, they could have been done 10 years ago in terms of the technology that is used.

Size Doesn't Matter

Touted by WildTangent as the first fully downloadable fantasy role-playing game, *Fate* uses mouse-click commands rather than keystroke combinations, as do many RPGs. And its gameplay is straightforward, so there is no need to read a manual before proceeding. By offering a friendly entry point for the casual gamer, *Fate* enables players to customize their characters and play intuitively, while completing the quests quickly.

As a result of streamlining the fantasy role-playing experience in terms of both play and delivery, the developer is opening the door to a new audience not only for *Fate*, but for RPGs in general. And there's little doubt this audience will embrace such offerings, given the current popularity of fantasy titles, fueled by such franchises as *The Lord of the Rings* and *Harry Potter*.

"But fantasy gaming can be daunting

to the casual player, with most of the current retail games requiring a significant cost and time investment," adds Travis Baldree, *Fate*'s lead developer. "What *Fate* delivers is an opportunity for casual gamers to jump into adventures of exploration and treasure hunting that can be completed during a coffee break—or an all-night session."

Baldree adds this qualifier because he believes that more sophisticated RPG players also will be drawn to the fantasy/adventure game, which he claims is similar in scale and scope to retail role-playing games that ship fully or partially on CD-ROMs. Also, *Fate* features detailed 3D imagery, real-time lighting, gameplay depth, and extended play achieved through a random generator that changes the layout of the game when a new character is created.



Players begin the game by customizing a character (left), whose appearance further evolves through the acquisition of various powers and weapons earned in battle (above) that will be useful as the player progresses in the game.

Yet, fully installed, it occupies only about 25MB on a computer's hard drive, accomplished through the company's compression technology, developed in parallel with its scalable Web Driver rendering engine. The Web Driver leverages the DirectX gaming platform, an advanced suite of multimedia APIs for Windows development that was co-created by St. John, while he worked at Microsoft, to take advantage of the hardware present in current PCs for delivering advanced gameplay and graphics.

Compared to RPGs delivered on CD, *Fate*'s footprint is small; nevertheless, it is larger than WildTangent's other titles, which are about 8MB. While broadband users can

download the entire game in 30 seconds to 2 minutes, depending on their Internet service, those using a dial-up connection will need about 20 minutes for full delivery.

Light and Lively

Compared to most RPGs, which are dark and threatening, *Fate* has a lighter tone to the gameplay, supported by characters that are young and sympathetic (as opposed to the usual RPG character that is middle-aged and battle-worn). Also, helpful pets accompany the character on missions that are given to the player by friendly, rather than hostile, non-player characters. Furthermore, the monsters are more Disney-esque than gro-

tesque, making the content more appealing to a wider audience.

Once players download the game, they begin by choosing a cat or dog companion. Before they do so, however, they create a personalized character, male or female, whose appearance is customizable, from the shape of the face and the skin tone to the style of the hair. Later in the game, players can further customize their characters by choosing specific armor and weapons.

After the character is created, he or she is dropped into a pleasant town, which is brightly lit and colored, where the player learns the back story to the adventure and the ultimate mission, which has a familiar

●●●● Gaming

ring to that of most fantasy/adventure RPGs: find the hidden artifact at the bottom of the dungeon that's being held by an evil wizard. The theme, however, is deliberately unoriginal, notes Moulder. "One of the key elements of *Fate* is that it generates a new dungeon layout each time a person plays with a new character," he explains. "This enables the player to have a new experience each time without getting lost or confused by a complex story or quest."

Containing a total of 40 levels, the entire game can be navigated by an average player in 20 to 30 hours using the same character.

Quest for Great Graphics

The game's characters and monsters, which comprise about 1300 polygons each, were built using Autodesk Media and Entertainment's 3ds max and textured with Adobe's Photoshop. However, the WildTangent team had to develop custom plug-ins in order to use the 3ds max functionality for creating, lighting, and exporting the models in the highly compressed format



THE LOWDOWN ON THE DOWNLOAD

In the booming gaming market, casual gaming is big business, and is getting bigger all the time. Presently, casual games are more about checkers, bridge, and canasta than guns, death, and mayhem. Designed for people of all ages and gaming experiences, the titles tend to draw more women than other gaming genres, with 35- to 54-year-old females composing half this growing audience.

Today, there are more than 90 million online casual game players

in the US alone, 30 million of whom are broadband customers. And by 2007, that number is expected to increase to 150 million, accounting for \$3 billion in anticipated revenue, making this space extremely appealing to developers.

Another attractive aspect of this market is the relatively short development cycles for the titles, which take about six months for a group of five or so to build, compared to 18 months for a triple-A game from

a studio using a team of 50 or more. And because the development costs are so minimal, if a title does not do well, it will not bankrupt the company—an ever-present danger in the high-end market.

With this genre offering so few risks and so many potential rewards, expect other developers to venture into this market and bring with them novel or other mixed-genre offerings that will continue to expand this space. —KM

required by the Web Driver game engine. The proprietary compression algorithms, which take advantage of the mathematical nature of the polygons, retain the original poly count of the models, but at an overall 10:1 size reduction.

"For our audience, we needed to scale the experience so it would run well on a wide range of PCs," says Baldree. "So we had to figure out how to deliver real-time lighting, shadows, and particle effects on hardware that provided little to no 3D hardware support for those features. And we had to scale these features in ways that allowed the game to still look good on low-end boxes."

Mostly this task was accomplished through further development of the company's Web Driver to ensure that it could handle the game's dynamic, real-time lighting, reflections, and shadows without incurring performance or frame-rate degradation. So, if a playable character casts a spell by throwing, say, a fireball, the object will light the hallway as it travels down the corridor, and when it explodes,

Fate's bright settings, friendly characters, and Mario-like monsters, crafted in 3ds max, allow casual players to test the usually rough RPG waters.

the resulting flash of light will momentarily illuminate the surrounding area. The game also contains water surface effects and translucency that enables the player to see fish below a pond's surface—a key feature in a segment of play that enables the character to feed his or her catch to the pet, which in turn gives the animal magical powers.

Within each environment, every object is interactive, and any action is recorded and retained in the game's memory, tracked by the world environment. So, if you break an urn, for instance, the shards will continue to lie on the dungeon floor until you complete the game, explains Baldree.

Betting on a positive reception for *Fate*, WildTangent is already looking ahead at an upgrade to the world and the engine for early next year, possibly including multiplayer capabilities in addition to single-player action. "Most people who play casual games like to cultivate friendships, and adding online, multiplayer functionality will appeal to them," contends Moulder. And while the present release is available only through download from sites such as WildGames, Shockwave, Yahoo, AOL, and others, the company is not dismissing the possibility of also offering the sequel on CD-ROM.

Until then, the fate of the game will be in the hands of the players. ■■

Karen Moltenbrey is a senior technical editor at Computer Graphics World.



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Dragonology

Computer animation breathes life into beasts of legend By Jenny Donelan



Images courtesy Animal Planet / Framestore-cfc.

The visual effects crew at VFX/animation studio Framestore-cfc used Alias's Maya to model and animate dragons for a unique style of television docu-drama that blends fiction with reality.

If dragons actually existed, what would they be like? That is the question considered in *Dragons: A Fantasy Made Real*, an hour-long “docu-drama” from Animal Planet in which myth merges with reality, much as CG imagery merges with live footage. The program’s premise is that dragons lived on Earth from prehistoric times until relatively recently, but died out in the early Middle Ages as a result of human predation and encroachment on their habitats.

This entirely fictional account begins with the discovery of a dragon specimen preserved in the mountains of Europe, and continues with an inquiry into the nature and physiology of the mythical creatures. The scientific investigation, performed by real actors, is interspersed with flashback episodes in which digital dragons appear amid real-world footage.

If the look of the show recalls the BBC animated special *Walking with Dinosaurs*, it’s no accident: Framestore-cfc, the London-based visual effects and animation studio that produced *Dinosaurs*, also created *Dragons*. In fact, the studio’s work on *Dinosaurs*, and also on the TV specials *Walking with Prehistoric Beasts* and *Dinotopia*,

as well as the *Harry Potter* movies, helped prepare the group for the task of creating dragons.

Dragons: A Fantasy Made Real was created by Charlie Foley, directed by Justin Hardy, and narrated by actor Patrick Stewart of *Star Trek: The Next Generation* fame. The CGI team included Mike Milne, director of computer animation; Alec Knox, CGI supervisor; and Sirio Quintavalle, visual effects supervisor, all *Dinosaurs* veterans, in addition to Neil Glasbey, lead animator, whose credits include *Walking with Prehistoric Beasts* and work on the hippogriff creature in *Harry Potter and the Prisoner of Azkaban*.

Making Mythical Monsters

The CG sequences of the program vary in style, involving various types of dragons in unique settings. These include a prehistoric battle between a primitive dragon and a *Tyrannosaurus rex*; a marine scene with a limbless dragon swimming underwater; a forest environment in which a flightless dragon stalks a tiger; and a climactic mountain scenario in which a female dragon seeks and finds a mate, raises a daughter, and battles humans who invade her lair.

Early on, the program's creative team took pains to account for the dragons' physical characteristics. For example, how were such large animals capable of flight? (Their internal "flight bladders" contained lighter-than-air hydrogen.) How did they breathe fire? (They ate platinum, which set up the necessary chemical reactions.) Although these answers were created to support fantasy, they're partially based on real-world examples. For one thing, most animals, including humans, harbor gas-producing bacteria within their bodies, and the dragons' bacteria just happened to be of the hydrogen-producing variety. The developers got the idea for the platinum ingestion from the manner in which elephants deliberately consume minerals such as salt from rocks.

With the "scientific" basis for the creatures established, the Framestore art team's task was to create and animate the dragons. In keeping with the realistic, documentary style of the show, the creatures needed to look believable and move realistically. But of course, "it was a tricky thing to do, because they don't exist," says Glasbey.

At the start of the project, the group scanned maquettes of each type of dragon, creating high-resolution models. It



To create this fire-breathing dragon, the crew first shot film footage of real flames (from flamethrowers) in a real environment, then added the computer-generated dragon and some additional effects.

wasn't possible to rework, or in the case of the *T. rex*, reuse, models from earlier projects such as *Walking with Dinosaurs*, notes Quintavalle, first because the BBC owns the rights to the dinosaur models, and second because the models were created in Softimage's XSI, while *Dragons* was produced in Alias's Maya. Also, he notes, models, as a rule, are usable for only three or four years before they become obsolete from a technological standpoint.

Next, the artists rigged each dragon with a simple skeleton for the preliminary animation. Then, as the project proceeded, the group animated the models with greater detail and complexity, while a second team textured and lit another set. The complex animations and the detailed models were not combined until late in the process, enabling the Framestore artists to save time.

The animation process itself was especially challenging because there are no large, winged, fire-breathing animals in nature to use as examples. So, the artists turned to other sources, such as flames from flamethrowers, which they filmed and then composited into the footage for the fire-breathing element.

The wings, however, posed the greatest challenge, says Glasbey, because "it was difficult to create a character that was consistent both in flight and not." As a result, the animators faced issues such as where to attach the wings so they wouldn't interfere with the animals' walking—or flying, as early wing iterations collided with the dragons' bodies when they became airborne.

The animators used real-world examples for the dragons' flight patterns—the wing movements of birds and bats, for example—

but this was only so helpful because of the extreme body mass of the beasts. "A real creature of that size would need enormous wings to actually fly," Glasbey says. But animating what an animal the size and shape of a dragon would probably look like while flying, paradoxically, did not look convincing. So, eventually, the animators had to compromise, striving instead for what looked believable, even if,



A dramatic chase involving a flightless dragon through the flat light of a misty forest setting required the digital effects team to use shadows sparingly in the scene.

●●●● Broadcast

by the laws of physics, it wasn't. "We would work with a model on screen until it took on a life of its own," he adds.

Finally, for coloring and texturing the models, the artists used a variety of programs, including Maxon Computer's BodyPaint 3D. Real-world reptiles provided some inspiration for the dragon scales and skins, and "we knew a lot from *Dinosaurs* about what worked and what didn't," says Quintavalle.

Fire and Ice

Once the artists finished the models, they composited them into the live footage. The physical backgrounds, according to Quintavalle, provided the desired level of realism far more than CG backgrounds would have. Actual actors and a real tiger used in the film also added to overall realism.

The live shots were obtained over a three-month period in three different locations: the Canary Islands for the prehistoric footage, a bamboo forest in France for the forest dragon segment, and the French Alps for the mountain dragon scenes. Each of these locations provided different challenges. For the prehistoric segment, the action moves from the bright light and stark background of a volcanic crater to a "flat light" environment in which the characters race in and out of fog. The mountain scenes, many of which were shot in an ice cave, included live actors and flamethrowers, elements that added to the general complexity of the shots, especially "in an ice environment, where reflections are going on everywhere," says Quintavalle. He notes that the new image-based lighting technology in Maya helped in this area, enabling, among other effects, subtler shadow falloffs.

The ice cave scene presented logistical challenges as well. The location was at high altitude and, therefore, was taxing to the crew.



To create the effect of a dizzying descent, the team merged mountain footage for a top-to-bottom effect, then added CG dragons spiraling downward.

And the floor of the ice cave was a sheet of ice that required everyone to wear crampons. The use of flamethrowers added an extra measure of danger to the mix.

The third element of the *Dragons* production—aside from the models and the backgrounds—is the fire. Particularly in the final mountain dragon scene, fire appears frequently and in different guises: A pair of courting dragons scorches the earth at the end of their mating ritual, a dragon woken from hibernation tries desperately to breathe fire but can only produce a few puffs, and a mother dragon blows fire on a rock nest to keep her eggs warm. For this last

effect, says Quintavalle, "we gave the fire a magical quality by adding a bit of magnesium dust to make it sparkle."

Dragon Drama

The Framestore crew had a short amount of time in which to create *Dragons*—just 25 weeks. The end result, with 167 shots and 35 minutes of CG, represents a milestone of sorts in terms of turnaround time at Framestore. Behind this success were tools such as Autodesk Media and Entertainment's Inferno, used for compositing. The crew's background with *Dinosaurs* helped as well—they already had experience creating walk/run cycles for large, unlikely beasts.

A new sort of test posed by *Dragons*, however, was the dramatic emphasis. "That was the biggest challenge," says Quintavalle. "We were used to making a natural history sort of program, but this had to be more dramatic. Each shot had to be cinematic. We couldn't just shoot animals walking in herds."

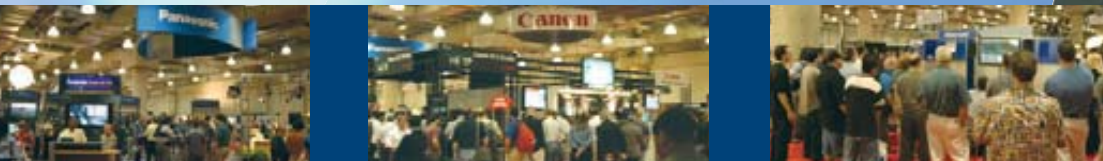
According to Quintavalle, the most successful shot of this type is the one portraying the courtship ritual performed by the two mountain dragons. The dragons interlock with each other, then spiral downward from the top of the mountain in a mating embrace until, mere feet from the earth, they separate, snort fire toward the ground in a sort of rocket-booster maneuver, then soar upward. (This scene is based on the manner in which bald eagles actually mate, sans the fire breathing, of course.) In order to create the scene, the crew shot the mountain range in several segments (base, middle, and peaks), merged the footage, inserted dragons, and panned down on the clasped couple as they tumbled past the mountain footage.

Dragons: A Fantasy Made Real appeared on Animal Planet in the US this spring, and in the UK under the name *The Last Dragon*. That title refers to the plight of the episode's beleaguered mountain dragon, among the last of its kind. Even though the story is completely fictional, viewers may find themselves relating to the environmental message, and experiencing sympathy for this fearsome predator that is only trying to carve out an existence for herself and her young. Because her needs interfere with those of humans—she has begun taking livestock from nearby farms—her days and those of her kind are numbered. It's a state of affairs that will be all too familiar to viewers of real-world nature programs, and demonstrates yet another way in which this fantasy story blends with reality. ■■

Jenny Donelan is a contributing editor for Computer Graphics World. She can be reached at jdonelan@adelphia.net.

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Technology

It used to be that the graphics and processing power needed to create high-end graphics existed only in extremely large workstations. As processor speed increased, these much-heralded traits moved to the desktop. Now, a new crop of mobile workstations is giving desktop models a run for their money. PCI Express-based graphics and fast processor speeds, along with good ergonomics and large LCD displays, make these mobile powerhouses excellent platforms for virtually any type of graphics work.

Of course, a mobile workstation is a lot of technology packed into a very small space, and this compact technology comes at a premium. A laptop will always cost more than a similarly equipped desktop unit. People who need notebook systems, such as on-set effects artists and technical directors, however, are willing to pay extra for mobility. The convenience of tossing your work into a laptop bag at the end of the day and taking it wherever necessary can be invaluable. And many of these new systems are fast enough to replace a desktop workstation completely, eliminating the need for two machines.

When it comes to mobile workstations, graphics is the name of the game. The

one component that really sets a mobile workstation apart from an ordinary laptop is the graphics chip. Mobile workstations sport portable versions of the high-end graphics chips employed in professional workstations. These workstation-class graphics chips differ from their business and gaming counterparts in that they provide true OpenGL support and are fully verified as compatible with a wide range of graphics applications. Simply put, these boards are guaranteed to work powerfully and flawlessly with the most intense graphics applications.

Power and Portability

Right now, there are two main providers of workstation-class graphics chips for the mobile workstation market: ATI, with mobile versions of its FireGL chips; and Nvidia, with its Quadro FX Go chips. Both of these vendors recently introduced PCI Express-based solutions that offer performance on par with their desktop workstation graphics boards.

ATI has been particularly aggressive in the mobile market, and its FireGL cards have been used in a number of mobile workstations from Hewlett-Packard, IBM, and Fujitsu. ATI's newest Mobility FireGL card is identical to its FireGL V5000 PCI Express-based desktop workstation card.

Because it's also used in desktop workstations, the chipset offers excellent mid-range performance, but it also consumes very

little power to extend battery life. The V5000 uses 128MB of fast GDDR3 memory, as well as six geometry engines and eight parallel rendering pipelines, to deliver ultra-fast processing of complex data sets, real-time cinematic-quality rendering, and multiple-display output. The HP Compaq nw8240 mobile workstation, the first machine to be powered by this chip, offers lots of power in an exceptionally thin and ergonomic package.

Nvidia also offers workstation-class mobile chips in its Quadro FX Go series, which has found a home in mobile workstations from Alienware, Dell, and Boxx Technologies. The Quadro FX Go 1400 is Nvidia's top-of-the-line chipset, with 256MB of video RAM and PCI Express-based technology for fast mid-range performance. The chips use Nvidia's PowerMizer technology, which incorporates a variety of power-saving techniques to maximize battery life. Workstations sporting this chip include Dell's M70, Boxx's GoBoxx 2200, and Alienware's Area-51m 7700.

The built-in screen of the laptop is also an important part of the graphics equation. The screen size is key, but larger screens typically mean a larger laptop that is bulkier and more cumbersome. Most mobile workstations sport 15- or 16-inch screens, but some go as high as 17 inches. The quality of the screen is another consideration. LCD screens have come a long way, but many still lack the quality and brightness of a good desktop display. This is changing, however, and vendors such as Dell are offering different grades of LCD screens. Another interesting take on the LCD can be seen in the Sharp Actius AL3DU, which provides a 3D-enabled display that doesn't require stereo glasses to see things in depth.

MASTERING

Mobile workstations need to be speedy in other areas, aside from their graphics capabilities. A fast processor is always a plus, and both AMD- and Intel-based processors have been used in mobile workstations in the past. These days, it seems as though Intel is the de facto choice for the current crop of mobile workstations, thanks to Intel's early adoption of PCI Express-based graphics.

Comparing Chipsets

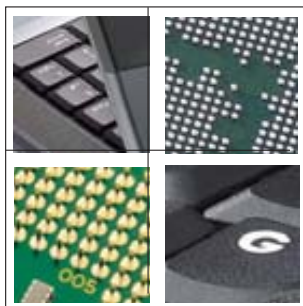
Many mobile workstations currently use Pentium 4 Extreme CPUs, which offer the same speed and power as desktop workstations. Yet, these processors are fairly power hungry and

make for larger laptops because of power and heat requirements.

Pentium 4 chips are going to see significant competition from the new Dothan-class Pentium-M processors. This processor family consumes significantly less power than its desktop counterpart, but thanks to 2MB of cache memory and a new 90nm process, it has plenty of speed. In fact, a 2GHz Pentium-M actually can match the speed of a 3.2GHz Pentium 4 when running graphics applications. While this falls a little short of the 3.8GHz Pentium 4 performance available in the most powerful mobile workstations, the reduced power consumption of the Pentium-M CPUs goes a long way toward conserving battery life and reducing heat. Less power consumption also means that smaller batteries are required to run the laptop for the same period of time; smaller batteries go a long way in reducing the size and weight of the

workstation. Both Dell and HP have opted for Pentium M chips in their newest mobile workstations, which are among the thinnest and lightest on the market.

Disk speed and capacity are important, particularly when working with large video files. Mobile workstations use 2.5-inch drives, and currently the fastest of these drives spin at 7200 RPM. This speed is certainly an improvement over previous tech-



nology, and workstations using faster drives should be able to handle a single stream of standard video with no problems. Those needing even more speed for high-end compositing or other disk-intensive tasks may need to consider a RAID array.

Several vendors, including Boxx and Alienware, now offer dual drive bays in some mobile workstations, enabling you to set up an internal RAID for advanced disk performance or data security. In fact, 1Beyond has taken this concept even further by bundling the internal RAID along with Avid or Adobe software to provide a turnkey video editing solution in a laptop enclosure.

Getting data into and out of the system is always a consideration, particularly with mobile workstations. Most workstations come with standard Gigabit Ethernet and an 802.11g wireless connection. Data can also be moved via USB and FireWire ports, which have become standard as well. For data backup, mobile workstations can be configured with CD or DVD writers. Other nifty little features include slots for memory cards, such as the SD card slot on the HP nw8240 and the ev-

er-present MemoryStick slot available on any laptop from Sony.

Comforting Considerations

While performance is always an important part of the equation, mobile workstations also need to be ergonomic. It is understandably a personal issue, as people will have different tastes and requirements. Typically, a small and light unit is a benefit, but those needing more powerful machines may have to settle for a slightly thicker and heavier solution. Some of these mobile workstations tip the scales at as much as 11 pounds. Others compromise a bit of power for portability, and weigh half as much. This trade-off is typical, and those needing the absolute fastest model will be charged with the task of carrying a heavier and bulkier device.

When it comes to ergonomics, even seemingly minute traits—including the size and placement of the touchpad and the feel of the keyboard—can have a profound effect on the usability of a machine. So it's usually best to try before you buy.

It's a great time for graphics professionals on the move. While there will always be a trade-off between performance and portability, the gap between the desktop and the laptop has closed significantly. Thanks to faster and more power-efficient CPUs, mobile PCI Express graphics, and robust hard drives, the newest crop of mobile workstations can now perform on par with all but the fastest high-end desktop workstations. ■■

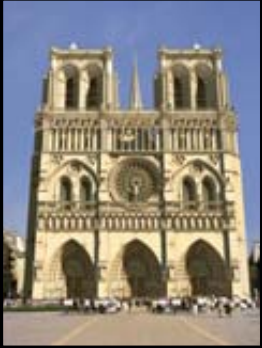
George Maestri is president of Rubberbug, a Los Angeles-based animation studio specializing in character animation.

MOBILITY

Today's mobile
workstations present
viable options for
DCC professionals

Portfolio

— Luciano Neves



From top:

Notre Dame Cathedral "I consider Notre Dame the mother of all cathedrals, aside from being a great architectural example," says Neves. "The project presented unique challenges; for example, the stones look different in the daytime sun than they do in the rain or at night."

The White House "When placing the virtual architecture into a scene like this, I often add complementary photographic elements, such as skies, trees, people, and, here, the fountain."

Basilique du Sacre Coeur "The actual basilica's proportions, structural details, lighting, and integration with its surroundings made this study particularly difficult."

When Luciano Neves, a project coordinator for a Brazilian 3D production facility specializing in broadcast and cinema, creates digital artwork, the process usually becomes a reality check of sorts for him. That's because Neves virtually re-builds some of the world's greatest architecture in photorealistic detail as a way to perfect content-creation techniques. Moreover, he views the models as "building blocks" that, with further development, could be used in a film if the opportunity ever arises.

Re-creating well-known buildings and structures such as London's Tower Bridge and Notre Dame Cathedral is a tall order, as viewers inevitably compare the virtual version with the real construction. As a result, Neves researches the locale and its history, and takes pictures to use as references. Then, when working in 3D, he tries to imagine how people created



these structures—which today are historical landmarks—when resources were limited.

According to Neves, one of the key aspects to achieving a 3D photorealistic image is maintaining an attention to detail, particularly to how the light reacts with the environment and the materials and objects in the scene. “My objective is to use computer graphics for cinema, in ambient creation or large constructions and scenarios where the lighting and design of the scenery require significant attention to have maximum similarity to the real world,” he says.

A sampling of Neves’s architectural re-creations, which are modeled and lit in 3ds max, appears on these two pages. Additional information about the artist and his works can be found on his Web site at www.infinitecg.com. —Karen Moltenbrey

From top:

Tower Bridge “The study of light and its properties are vital for achieving photographic detail,” Neves explains. “In this study of day and night illumination, I used separate areas of light influences on the model of this famous London landmark.” On average, the artist spends 25 to 50 hours during a one- to two-week period developing a 3D architectural scene such as this one—far less, he points out, than would be required for a film project.

Train Station “This project, involving a rendition of the decaying train station in the city where I was born, required the re-creation of aged, rusty, dirty materials. I prefer modeling great old architecture because it contains complex detail. Not only do I learn a lot about illumination textures and modeling, but some history as well.”

GRAPHICS BOARDS

ATI FireGL Visualization Series

ATI's latest FireGL boards range from the high end to the entry level

By George Maestri



The top-of-the-line V7100 and midrange V5000 proved valuable in 3D animation and compositing applications.

PCI Express is taking the graphics world by storm. The new interface offers much higher bandwidth and features for high-end graphics applications. Graphics card vendors have been understandably busy creating new cards that take advantage of this new technology. With the introduction of PCI Express, ATI began shipping a new line of its venerable FireGL professional graphics boards. They all offer a wide range of capabilities and take advantage of the speed provided by PCI Express.

ATI shipped four different cards for evaluation—its entire line of PCI Express cards, save one (the V3200). The product family encompasses the entry-level V3100 and V3200, both with 128MB of RAM; the midrange V5000 and V5100, also with 128MB of RAM; and the 256MB V7100.

The FireGL cards received were well designed and share common physical attributes with ATI's Radeon cards. The FireGL cards differ from their Radeon cousins in that they fully support the OpenGL standard and are verified to work with major 3D applications. Those using programs such as Alias's Maya and Softimage's XSI will need a compliant OpenGL card to take full advantage of the software.

The V5000 is the most compact of the bunch and should run fairly cool, as its chips are manufactured using a smaller processor that shares a common lineage with ATI's laptop chips. This compact card should work well with any system, including the new

smaller-format machines, such as those from Shuttle. The V5100 and V7100 are a bit bigger with much larger heat-sinks, making them more appropriate for a system housed in a larger case. The top-of-the-line V7100 is also a little bit more power-hungry than the rest, requiring an extra cable that attaches to the power supply.

The FireGL cards support dual displays, and all but the entry-level V3100 sport two DVI connectors. Two of the cards, the V5000 and the V7100, boast Dual Link DVI support for increased display quality. This hardware connection is used for high-end, high-resolution displays, including 9-megapixel models and the new 30-inch Apple Cinema monitor. The caveat to using ultra-high-resolution displays is that they require a significant amount of video RAM to power them. It puts the 128MB V5000 at a slight disadvantage: almost half of its memory would be used to drive a 9-megapixel display, leaving half for processing 3D data. The 256MB V7100 is the logical choice for those who need fast 3D and an ultra-high-resolution display.

ATI supplies a unified driver software with its FireFL cards, and it worked well for all the cards reviewed. The control panel allows you to set up multiple displays, manage color, and customize OpenGL settings. The drivers proved to be highly stable, and I encountered no real problems.

Each card performed admirably under

test conditions. I used Viewperf 8.01 to run the numbers. The V7100 scored a 37.56 on the 3ds max test, 44.32 on the Maya test, and 27.36 on the UGS-04 test. These numbers place the

V7100 toward the front of the pack in the race for fastest graphics card. The V5100 and V5000 were very close to the V7100 in terms of speed. As a result, the V5100 and V5000 provide the best price-performance ratios in the product line.

Application performance was solid for each of the cards. I find that real production work is always a good test for new hardware, so I used the V5000 and V7100 cards in my studio's production machines to animate and composite some 3D characters with live action for a TV series we're producing. My staff and I spent a few solid weeks working in Alias's Maya, Autodesk Media and Entertainment's 3ds max, and Adobe's After Effects with both cards, and we encountered no issues whatsoever.

The cards that stood out from the pack were the V5000 and V7100. The V5000 is notable because it is the smallest of the cards, supports Dual Link displays, is the most power efficient, and has the best price-performance ratio of the line. I chose the V7100 simply because it is currently ATI's top-of-the-line card and is quite fast.

Overall, the FireGL cards from ATI represent a strong lineup for those who need professional features and performance at modest prices. The cards are well-built with stable drivers, take full advantage of the speed offered by PCI Express, and are a good choice for anyone involved in 3D animation, compositing, or design work. ■■

George Maestri is president of Rubberbug, a Los Angeles-based animation studio specializing in character animation.

ATI FireGL Visualization Series

stats

Price: \$1099 for the V7100, \$799 for the V5100, \$699 for the V5000, \$399 for the V3200, and \$249 for the V3100

Minimum System Requirements: Intel Pentium 4/Xeon, AMD Athlon/Opteron, or compatible CPU; PCI Express x16 lane bus; 128MB of system memory; CD-ROM drive; and a 300-watt or greater power supply.

ATI Technology
www.ati.com

TABLET

Wacom Intuos3

Wacom's pressure-sensitive tablet sports new and enhanced features

By Chris Hipp and Dan Rodd

As digital content creators with a preference for such traditional media as pencil and paper, we're always interested in innovations that enable us to work more naturally in the digital realm. For this reason, the latest generation of Wacom's Intuos pressure-sensitive tablet caught our attention.

We installed the 6x8-inch Intuos3 on an Apple Power Mac G5 equipped with dual PowerPC G5 processors, each with 512KB of cache memory; 1.5GB of hard-disk space; 2.5GHZ L2 speed; 1.25GHZ bus speed; powered USB ports; a CD-ROM drive; Mac OS X; and an Apple Studio display.

The tablet ships with an Intuos3 Grip Pen and Intuos3 five-button mouse, both of which have been redesigned to accompany this latest tablet. (For info on Wacom's new 6D pen, see pg. 37.) The Intuos3 is bundled with several applications: Adobe Photoshop Elements 2 for digital photo editing and compositing, Corel Painter Essentials 2 to create natural-media art and organic effects, Nik Color Efex Pro 2 IE from Nik Multimedia for photographic enhancements and effects using various filters, and Wacom Brushes 2.

Although we dabbled in each of the software solutions provided with the device, we spent much of our time working in Adobe's Photoshop and Illustrator and Corel's Painter. We quickly became impressed with the number of brush choices available to us in Photoshop, thanks in large part to the Wacom Brushes 2 plug-in and Corel's new Art Pen Brush Pack for Painter IX.

We encountered no problems during what proved to be a simple setup process. Hardware and software information was effective, easy to understand, and readily available. Soon after the Intuos3 arrived, we began creating and editing digital images.

As with its predecessors, the Intuos3 must be tethered to the computer during use. Yet, the cord was extended to a full 8 feet in length, while the surface of the tablet is flanked by ExpressKeys and Touch Strips. ExpressKeys can be customized with mouse clicks, modifier keys, and keyboard shortcuts, whereas Touch Strips are finger-sensitive areas conducive to scrolling and zooming. The 8-foot-long cord, ExpressKeys, and Touch Strips provided us the freedom of moving away from the workstation, but we need to be in close proximity to the display for instant feedback. And we're likely to use more than the four shortcuts afforded by the ExpressKeys. Even with the Intuos3, we found ourselves doing all the hot-key combinations—in addition to a few more, like undo and save—with one hand on the keyboard.

Of all the new utilities in the Intuos3, the Touch Strips are the most efficient, effective, and helpful. We customized one Touch Strip for zoom, which proved to be a real time-saver. With a fingertip, we could zoom in and out and position the image precisely where we wanted it, in a way that key command shortcuts for zooming can't. Infusing the other Touch Strip with scrolling capabilities, we gleaned even more productivity.

Immediately evident was the device's increased pressure sensitivity. This latest incarnation of the Intuos tablet offers twice the pressure sensitivity,

1024 levels as compared to the 512 levels offered by the Graphire3 and Cintiq—a considerable upgrade. With the new tablet and bundled software, we could achieve more expressive brush strokes of varying thicknesses and with increased realism and depth.

The Intuos3 ships with a redesigned pen stylus, accompanied by three pen nibs. The Intuos3 Grip Pen, much more ergonomic than its predecessor, features a cushioned, contoured barrel and grip, as well as a programmable DuoSwitch and a multiposition pen stand. We enjoyed using each provided pen nib, especially the graphite-style nib. It offers just the slightest bit of resistance, which feels more natural, much more like drawing with a traditional pencil. Moreover, the quality of the pen nibs is superior to previous generations. Another update, the Intuos3 five-button mouse employs optics, rather than a ball, to ensure smoother and more accurate performance. It also offers a low-profile design, five programmable buttons, and a fingerwheel.

Of all the tablets and tablet PCs we've used, we prefer the Intuos3. It is more accurate than the Cintiq and more comfortable than the Graphire and past Intuos models. Its sensitivity is impressive, as are its ergonomics. Some things about the handheld screen of the Cintiq still are quite appealing, but the Intuos3 is more comfortable, pressure sensitive, and accurate. ■■

Chris Hipp and Dan Rodd are professional illustrators well versed in a wide variety of digital imaging applications.



When creating this image and others, author Dan Rodd employed the Intuos3's expanded brush collection.

Wacom Intuos3

stats

Price: \$220, \$350, and \$470 for the 4x5-, 6x8-, and 9x12-inch versions, respectively

Minimum System Requirements:

Computer running Windows 98SE, 2000, Me, or XP or Mac OS X Version 10.2.6 and higher; a powered USB port; a CD-ROM drive; and a color monitor.

Wacom Technology
www.wacom.com

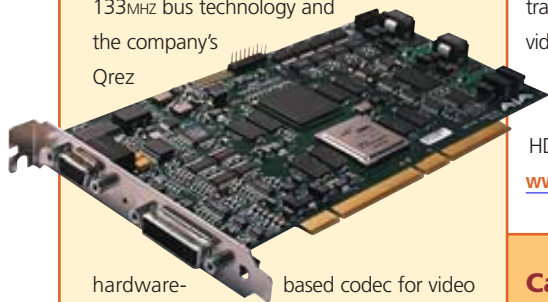
HD Video Boards

By Courtney E. Howard, Senior Technical Editor

Perhaps no acronym has been used as much this year as HD (high definition). It's the topic of conversation and guest of honor at industry trade shows, addresses and keynotes, technology conferences, and even online forums and blogs. Chances are, if you're involved with video, it's on your mind. And the vendor community has responded to the growing desire for HD quality with the release of supporting and enabling technologies. Here we spotlight the latest innovations in the area of HD video boards, integral to the capture, input/output, imaging, acceleration, and editing of video.

AJA Video Systems

AJA has announced the availability of software release 1.1 and three free downloadable utilities for its Kona 2 uncompressed capture card. Compatible with HD, Dual Link HD, and SD, Kona 2 features PCI-X 133MHz bus technology and the company's Qrez



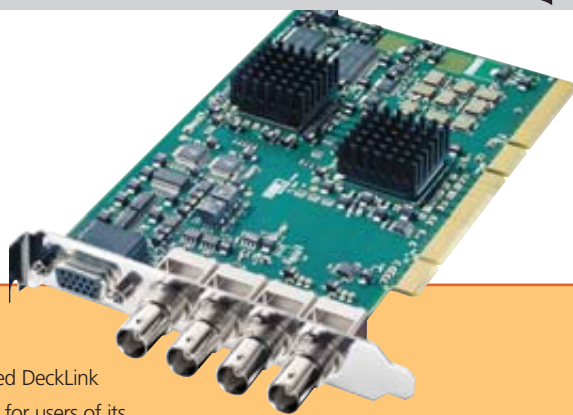
hardware-based codec for video compression at a 4:1 ratio. It offers broadcast-quality 10-bit SD to HD up-conversion, 10-bit HD to SD down-conversion, and automatic 12-bit HD/SD component analog video output. The card also provides dual-monitor desktop viewing, hardware acceleration for the new DVCProHD codec in Apple's Final Cut Pro HD, and support for Adobe's After Effects and Photoshop, as well as Final Cut Pro RT Extreme effects. AJA also offers the Xena DXT, a 64-bit, 66MHz PCI, HD/SD-capable card for media encoding and transport.

www.aja.com

Blackmagic Design

Blackmagic Design has announced DeckLink for Mac OS Version 4.8 software for users of its DeckLink broadcast video cards. The company boasts two high-definition models—DeckLink HD Pro, priced at \$1995, and DeckLink HD Plus, for \$995. Designed with high-end television and feature-film postproduction in mind, DeckLink HD Pro is a 12-bit HDTV Dual Link 4:4:4 capture and playback card featuring a single-slot PCI-X 133MHz interface, two-channel SDI input and output, true 14-bit analog 4:4:4 HDTV and SD monitoring output, and a full uncompressed 10-bit 4:4:4 RGB codec. DeckLink HD Plus, a 10-bit HD-SDI and NTSC/PAL video card, includes a PCI-X 133MHz interface, Sony-compatible RS-422 and Genlock input, and support for HD, HDTV, and SD formats. Both DeckLink cards offer true 10-bit and 8-bit uncompressed video-quality modes, independent video and audio monitoring outputs, compatibility with Apple Mac OS X and Microsoft Windows, and Blackmagic Deck Control software.

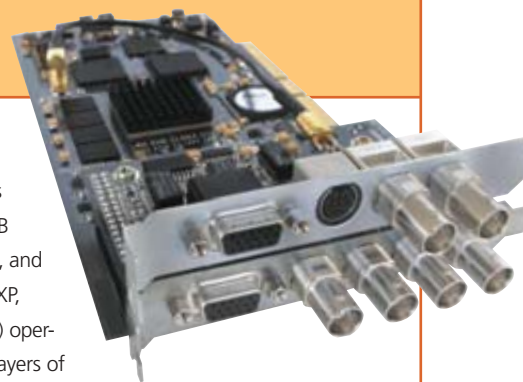
www.blackmagic-design.com



Bluefish444

A division of Digital Voodoo, Bluefish444 unveiled its latest uncompressed video card, Catalyst, during NAB 2005. Catalyst joins the company's HD Fury, HD Lust, and HD Iridium XP video boards. Supporting Windows XP, Windows 2000 Pro, and Linux (2.4 and 2.6 kernels) operating systems, the HD video card enables multiple layers of uncompressed real-time video processing with its dual 1GHz digital serial processors and field-programmable gate array. A PCI-X 64-bit 133MHz PCI interface provides up to 1GB/sec data-transfer speeds and support for a maximum of five streams of uncompressed 10-bit YUV HD SDI video, whereas its internal keyer function aids users in overlaying video or graphics on an SDI input stream. Catalyst also supports the 16-bit RGB pixel format, HSDL frame rate, and 2k film resolution. In fact, Catalyst enables real-time down-conversion and up-conversion between 2k and HD/SD SDI, and others in between. Catalyst will ship next quarter with a \$15,995 price tag.

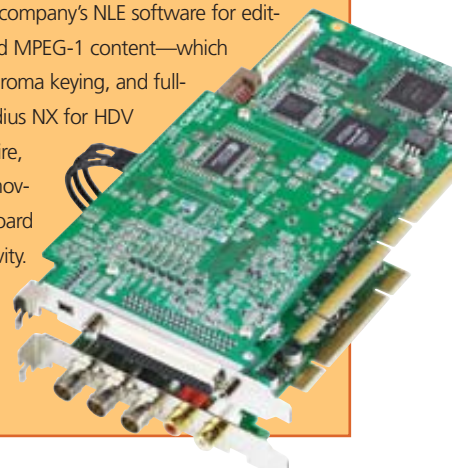
www.bluefish444.com



Canopus

Canopus offers its Edius NX for HDV, priced at \$2098, and Edius SP for HDV, at \$3999, for video professionals. Both boards are powered by Edius Pro 3—the company's NLE software for editing and processing HDV, uncompressed SD, DV, MPEG-2, and MPEG-1 content—which enables multitrack and mixed-format editing, compositing, chroma keying, and full-resolution HD video output to an HD monitor in real time. Edius NX for HDV features a 5.25-inch breakout bay with connectors for FireWire, S-Video, and composite video. For postproduction facilities moving from SD to HD, Edius SP for HDV includes a 64-bit PCI board with FireWire, component, composite, and S-Video connectivity. Canopus also recently launched the HDV Education Site (www.canopusedu.com), complete with a guide to HDV, for video professionals planning to move from SD to HDV.

www.canopus.us





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SOFTWARE

PAINTING

Brush Expansion

Win • Mac Corel, in conjunction with Wacom Technology's launch of its 6D Art Pen, has introduced Corel Painter IX Art Pen Brush Pack. The new offering is a collection of Corel Painter brush-



es designed to take advantage of the six-dimensional pen from Wacom that works with Wacom Intuos3 and Cintiq models. Five brushes are included in the Art Pen Brush Pack: a thin, smooth calligraphy brush; grainy calligraphy brush; soft, flat oils brush; square, grainy pastel brush; and tapered gouache brush. The smooth calligraphy, grainy calligraphy, and pastel brushes enable the artist to move the pen stroke through a full 360-degree rotation. Corel's new Art Pen Brush Pack

is available as a free download to Painter IX users. Corel Painter IX is priced at \$429 for the full version and \$229 as an upgrade.

Corel; www.corel.com/painter

PARTICLE EFFECTS

Partaking of Particles

Win • Mac Wondertouch has unveiled a collection of preset particle effects, Wondertouch Particle Emitters for Motion, designed for use with Apple's Motion software. Wondertouch's latest offering provides various particle effects, the parameters of which can be customized for the creation of smoke, fire, explosion, or organic background elements. Wondertouch Particle Emitters for Motion is available in three packages: Small, Medium, and Large. The large edition, for example, incorporates 330 particle emitters and is priced at \$149.

Wondertouch; www.wondertouch.com

ROTOSCOPING

A Roto Route

Win • Mac Silhouette FX LLC has started shipping Silhouette Roto, a plug-in for Adobe After



Effects and Apple's Final Cut Pro. The rotoscoping plug-in offers beziers, b-splines, a multi-frame editing mode, support for 8- and 16-bit depths, and tools for drawing, reshaping, and transforming shapes. Silhouette Roto users can rotate, scale, skew/shear, move, and corner-pin shapes, as well as preview final composites. It also features motion blur, variable-edge blur, motion trackers, and OpenGL hardware-accelerated rendering. The company also debuted a stand-alone version of Silhouette Roto—complete with floating-point processing, 8- and 16-bit support, and the ability to include multiple sessions in a single project—for the Linux, Mac, and Windows operating systems. Silhouette Roto is priced \$395 as a plug-in, \$495 as stand-alone software, and \$595 for both.

Silhouette FX LLC; www.silhouettestfx.com

events

MAY

17–20

E3 2005, held in Los Angeles. Contact 877-216-6263, www.e3expo.com.

JUNE

23–24

Games, Learning & Society Conference 2005, held in Madison, WI. Contact Games + Learning + Society, 608-263-6657, www.glsconference.com.

24–26

2005 VES–VFX Festival, held in Santa Monica, CA. Contact the Visual Effects Society (VES), 310-822-9181, www.vesfestival.org, www.visualeffectssociety.com.

JULY

11–14

Macworld Conference and Expo 2005, held in Boston. Contact Macworld Expo, 800-645-3976 or 805-677-4294, www.macworldexpo.com.

18–21

Digital Video Expo East 2005, held in New York City. Contact Digital Video Expo, 888-234-9476 or 415-947-6135, www.dvexpo.com.

31–8/4

SIGGRAPH 2005, held in Los Angeles. Contact SIGGRAPH, 877-244-4432, www.siggraph.org.

HARDWARE

CONTROLLERS

Modern Manipulation

3Dconnexion, a Logitech company, has introduced the SpacePilot intelligent motion controller for content creation, design, and analysis applications. Designed to increase productivity, SpacePilot offers 3D motion control, function keys with adaptive technology, and a built-in LCD. The function speed keys provide quick access to frequent program commands and LCD-based labeling that corresponds to the application in use. When the user switches applications or tasks within an application, the speed keys and dynamic LDC automatically adapt to the change. Keys can be not only labeled according to common functions—such as Ctrl, Shift, Alt, and Esc—in professional 3D applications, but also organized in multiple banks; users can switch banks to gain access to a far greater number of keys. The SpacePilot sports improvements in the controller cap, spring suspension, and software.

3Dconnexion; www.3dconnexion.com

Pen in 6D

Wacom Technology has developed, with the support of Corel, the 6D Art Pen designed to provide digital artists and designers with six dimensions of pen control while working in Corel Painter IX. The 6D Art Pen, priced at \$70, is compatible with Wacom's Intuos3 pressure-sensitive tablets and Cintiq 21UX interactive pen display. The six dimensions of the new pen are described as: X-axis, Y-axis, pressure, tilt (or the angle of the pen when tilted), bearing (the direction in which the pen is tilted), and barrel rotation (the orientation of the pen around its long axis). To date, Corel Painter IX Art Pen Brush Pack, Synthetk's Stu-



dio Artist, Maxon's Body Paint, and Kyma's Studio and Symbolic Sound are designed to benefit from Wacom's 6D Art Pen.

Wacom Technology; www.wacom.com

VIDEO

Deko in HD

Pinnacle Systems, in the process of being acquired by Avid Technology, has released Pinnacle Deko 1000HD, its broadcast-quality system for creating and playing back HD graphics. Based on the company's standard-definition Deko



solutions, Pinnacle Deko 1000HD provides a straightforward, broadcast-focused work flow with the ability to deliver footage in native 720p and 1080i HD resolutions, and support of exiting assets in the 16:9 HD format.

Pinnacle Systems; www.pinnaclesys.com

WORKSTATION

Alienware Announcement

Alienware has presented its MJ-12m 7700 mobile workstation, designed with video-produc-

STOCK
OPTIONS

CLIP COLLECTION

Digital Juice has introduced its second volume of royalty-free stock footage, VideoTraxx 2. Delivered as QuickTime files in the NTSC television standard format, each piece of footage in the collection was shot professionally on film and video at standard-



and high-definition resolutions. VideoTraxx 2 includes the Juicer, Digital Juice's software utility that serves as a media manager and enables users to browse, preview, and convert video clips. More than 3000 video clips spanning 32 DVDs comprise VideoTraxx 2, now available and priced at \$599.

Digital Juice; www.digitaljuice.com

tion engineers and digital content creators in mind. An Intel Pentium 4 processor 530 with HT technology and a choice of the new Nvidia Quadro FX Go 1400 or Nvidia GeForce Go 6800 graphics cards ensure the system delivers the performance and reliability necessary in 3D animation, visual effects, and postproduction applications. The MJ-12m 7700 sports PCI Express technology, a 17-inch wide-screen XGA or SXGA+ Entertainment LCD, 256MB of DDR2 memory at 533MHz, and an 80GB hard drive.

Alienware; www.alienware.com

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Example "CAD to non-CAD" conversion. Unigraphics to Lightwave. Converted & optimized by PolyTrans. © 2005 CraneDigital, LLC. www.cranedigital.com

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