



CMP

United Business Media

▶▶ **PRODUCT REVIEW** NDL's GAMEBRYO 1.2 ENGINE

FEBRUARY 2005

# game**developer**

THE LEADING GAME INDUSTRY MAGAZINE

▶▶ **ANNUAL GDC PREVIEW**  
SHOW HIGHLIGHTS AND  
STAFF SESSION PICKS

▶▶ **FEMALE MARKET SHARE**  
HOW MUCH MONEY  
ISN'T BEING SPENT

▶▶ **BREAKAWAY INTERVIEW**  
CEO DOUG WHATLEY  
SPILLS SERIOUS BEANS



**POSTMORTEM:**  
**UP YOUR ARSENAL!**  
ON AND OFFLINE WITH  
**RATCHET & CLANK**

The background image shows Ratchet and Clank in a futuristic, industrial environment. Ratchet is in the foreground, looking towards the camera with a determined expression. Clank is next to him, also looking forward. In the background, there are other characters and a large explosion of orange and yellow flames with green energy trails.

# RT/shader: <sup>TM</sup>GINZA

**NEXT-GENERATION SHADER TOOLS FOR TODAY'S ARTISTS**

RT/shader: Ginza is the benchmark for real-time shader creation. With Ginza, you can build your shader visually, using standard artistic techniques while the software writes the HLSL, Cg, or just about any other shader language\* for you—all automatically. For artists, there's simply no better way to build shader content for current and next-generation titles.

Ginza utilizes direct connectivity to 3dsmax, Maya, and Renderware Graphics making it the easiest shader tool to plug right into your pipeline. If you want the best tool to build tomorrow's shader content today, RT/shader: Ginza is the only way to fly.

Visit [www.rtzen.com](http://www.rtzen.com) and download your free 30-day trial version.

[www.rtzen.com](http://www.rtzen.com)

**rtzen**<sup>®</sup>

800-73-RTZEN

\*other shader languages may require a plug-in via the RT/shader SDK. "next gen character" courtesy of Frederic Moreau.  
© 2005 RTzen, Inc. All rights reserved. RT/shader and the RTzen logo are trademarks RTzen, Inc. All other trademarks are the property of the respective owners.



28

## POSTMORTEM

### 28 UP YOUR ARSENAL: ON AND OFFLINE IN RATCHET & CLANK

In this third adaptation of the entertaining RATCHET & CLANK series, Insomniac ventured into the unknown by adding online gameplay. Despite the usual issues, like creating a sequel without cloning the original, and careful scheduling (the team's production timeline was a scant 13 months), Insomniac had the game out the door a week early. Here's how.

By Brian Hastings

## DEPARTMENTS

### 2 GAME PLAN

Kettle of Fish

### 4 HEADS UP DISPLAY

PSP launch, Molyneux's fame, Acclaim's shame, and more.

### 7 SKUNK WORKS *By Tom Whittaker*

Gamebryo 1.2

### 72 A THOUSAND WORDS

Atlus' SHIN MEGAMI TENSEI: DIGITAL DEVIL SAGA

## FEATURES

### 9 GAME DEVELOPERS CONFERENCE 2005 PREVIEW

Future Vision. IGF. Serious Games. City by the Bay. If you haven't met the buzzwords and acronyms yet, you'd better get acquainted, and soon. The 2005 Game Developers Conference is primed for March 7–11 in San Francisco. We've got outlooks and opinions on the lectures, roundtables, and panel discussions, as well as commentary on the highlights of the week's agenda.

By Simon Carless



9

### 16 INCREASING THE BOTTOM LINE: WINNING THE WOMEN'S MARKET SHARE

The amount of money women have to spend—and indeed do spend—on electronic entertainment hasn't been assessed into a well reasoned, comprehensive business plan in the game industry. Through a deep understanding of the facts and by listening to the successes of other industries, developers, publishers, and retailers may be able to (finally) earn serious money from this mostly untapped market.

By Clarinda Merripen



16

### 25 BREAKING THE WAVES

Doug Whatley, CEO of BreakAway Games, shares his thoughts about the game industry, how his company got into serious games, why independent developers should pay close attention to the medium, and where it might go from here.

By Brandon Sheffield



25

## COLUMNS

### 44 THE INNER PRODUCT *By Sean Barrett*

Late-Binding Data

[PROGRAMMING]

### 48 PIXEL PUSHER *By Steve Theodore*

Script Call!

[ART]

### 53 NECESSARY EVIL *By Phil Cooke*

Wireless Networks: Carriers and Barriers

[BUSINESS]

### 54 AURAL FIXATION *By Alexander Brandon*

The Line of Quality Part 1: Middleware

[SOUND]

### 55 GAME SHUI *By Noah Falstein*

Question Your Assumptions

[DESIGN]

## EDITORIAL

### EDITOR

Simon Carless [scarless@gdmag.com](mailto:scarless@gdmag.com)

### DEPARTMENTS EDITOR

Jill Duffy [jduffy@gdmag.com](mailto:jduffy@gdmag.com)

### ASSISTANT EDITOR

Brandon Sheffield [bsheffield@gdmag.com](mailto:bsheffield@gdmag.com)

### ART DIRECTOR

Cliff Scorsio [cscorsio@gdmag.com](mailto:cscorsio@gdmag.com)

### CONTRIBUTING EDITORS

Sean Barrett [sbarrett@gdmag.com](mailto:sbarrett@gdmag.com)  
 Alexander Brandon [abrandon@gdmag.com](mailto:abrandon@gdmag.com)  
 Noah Falstein [nfalstein@gdmag.com](mailto:nfalstein@gdmag.com)  
 Steve Theodore [stheodore@gdmag.com](mailto:stheodore@gdmag.com)

### ADVISORY BOARD

Hal Barwood Designer-at-Large  
 Ellen Guon Beeman Monolith  
 Andy Gavin Naughty Dog  
 Joby Otero Luxoflux  
 Dave Pottinger Ensemble Studios  
 George Sanger Big Fat Inc.  
 Harvey Smith Midway  
 Paul Steed Microsoft

### ADVERTISING SALES

#### NATIONAL SALES MANAGER

Afton Thatcher [athatcher@cmp.com](mailto:athatcher@cmp.com) t: 415.947.6217

#### SENIOR ACCOUNT MANAGER, EASTERN REGION & EUROPE

Ayrien Machiran [amachiran@cmp.com](mailto:amachiran@cmp.com) t: 415.947.6224

#### ACCOUNT MANAGER, NORTHERN CALIFORNIA & MIDWEST

Susan Kirby [skirby@cmp.com](mailto:skirby@cmp.com) t: 415.947.6226

#### ACCOUNT MANAGER, WESTERN REGION & ASIA

Nick Geist [ngeist@cmp.com](mailto:ngeist@cmp.com) t: 415.947.6223

#### ACCOUNT MANAGER, GLOBAL EDUCATION/RECRUITMENT & TEXAS

Aaron Murawski [amurawski@cmp.com](mailto:amurawski@cmp.com) t: 415.947.6227

### ADVERTISING PRODUCTION

#### ADVERTISING PRODUCTION COORDINATOR Kevin Chanel

REPRINTS Julie Rapp [jarapp@cmp.com](mailto:jarapp@cmp.com) t: 510.834.4752

### GAME GROUP MARKETING

#### DIRECTOR OF BUSINESS STRATEGY Michele Maguire

DIRECTOR OF MARKETING Tara C. Gibb

MARKETING MANAGER Scott Lyon

MARKETING COORDINATOR Yukiko Grové

### CMP GAME GROUP

VP, GROUP PUBLISHER APPLIED TECHNOLOGIES Philip Chapnick

CONFERENCE DIRECTOR, GDC Jamil Moleдина

ASSOCIATE CONFERENCE DIRECTOR, GDC Susan Marshall

EDITOR, GAMASUTRA.COM Simon Carless

### CIRCULATION

CIRCULATION DIRECTOR Kevin Regan [kregan@cmp.com](mailto:kregan@cmp.com)

CIRCULATION MANAGER Peter Birmingham [pbirmingham@cmp.com](mailto:pbirmingham@cmp.com)

CIRCULATION COORDINATOR Jessica Ward [jward@cmp.com](mailto:jward@cmp.com)

### SUBSCRIPTION SERVICES

#### FOR INFORMATION, ORDER QUESTIONS, AND ADDRESS CHANGES

t: 800.250.2429 or 847.763.59581 • 847.633.9606

[e:gamedeveloper@halldata.com](mailto:e:gamedeveloper@halldata.com)

### INTERNATIONAL LICENSING INFORMATION

#### Mario Salinas

[m.salinas@cmp.com](mailto:m.salinas@cmp.com) t: 650.513.4234 • 650.513.4482

### EDITORIAL FEEDBACK

[editors@gdmag.com](mailto:editors@gdmag.com)

### CMP MEDIA MANAGEMENT

PRESIDENT & CEO Gary Marshall

EXECUTIVE VICE PRESIDENT & CFO John Day

EXECUTIVE VICE PRESIDENT & COO Steve Weitzner

EXECUTIVE VICE PRESIDENT, CORPORATE SALES & MARKETING Jeff Patterson

CHIEF INFORMATION OFFICER Mike Mikos

SENIOR VICE PRESIDENT, OPERATIONS Bill Amstutz

SENIOR VICE PRESIDENT, HUMAN RESOURCES Leah Landro

VP/GROUP DIRECTOR INTERNET BUSINESS Mike Azzara

VP & GENERAL COUNSEL Sandra Grayson

VP, COMMUNICATIONS Alexandra Raine

PRESIDENT, CHANNEL GROUP Robert Faletta

PRESIDENT, CMP HEALTHCARE MEDIA Vicki Masseria

VP, GROUP PUBLISHER INFORMATIONWEEK MEDIA NETWORK Michael Friedenberg

VP, GROUP PUBLISHER ELECTRONICS Paul Miller

VP, GROUP PUBLISHER NETWORK COMPUTING ENTERPRISE ARCHITECTURE GROUP Fritz Nelson

VP, GROUP PUBLISHER SOFTWARE DEVELOPMENT MEDIA Peter Westerman

VP, DIRECTOR OF CUSTOM INTEGRATED MARKETING SOLUTIONS Joseph Braue

CORPORATE DIRECTOR, AUDIENCE DEVELOPMENT Shannon Aronson

CORPORATE DIRECTOR, AUDIENCE DEVELOPMENT Michael Zane

CORPORATE DIRECTOR, PUBLISHING SERVICES Marie Myers



# KETTLE OF FISH

## THIS ISSUE OF GAME DEVELOPER MAGAZINE

squeezes in a diverse set of comfortable topics on current issues, from Insomniac's ratchet-ing up of the RATCHET & CLANK series, to a well-researched take on the better inclusion of women in game marketing, selling, and buying, all the way through the outlook for this year's Game Developers Conference.

The postmortem for the month is from Insomniac's critically acclaimed, somewhat scatologically named PlayStation 2 title RATCHET & CLANK: UP YOUR ARSENAL (page 28). Not only was this game one of the highest-scored of the year in game magazines, astute chart-watchers may have noticed that, in the first month of North American sales, it outpaced friendly rival Naughty Dog's PlayStation 2 action platformer JAK 3, no mean feat considering the popularity of that competing series. The Insomniac team talks honestly about taking the RATCHET & CLANK gameplay online for this third iteration of the franchise, which ended up being much trickier than they originally anticipated. Insomniac has succeeded in keeping up the smooth gameplay while subtly advancing innovation in the much-loved single-player mode.

Meanwhile, Cyberlore's Clarinda Merripen revisits the always-thorny question of the women's game market (page 16), bringing somewhat of a fresh perspective to the conundrum. Previous takes on this issue have often been fairly blue sky, but her article analyzes specific statistics and uses examples of the market inclusion of women in other entertainment and service industries to draw parallels between these outside businesses and the game space.

## SERIOUS BUSINESS

Indeed, the definition of game space is ever expanding, as serious games become more of a hot-button issue. In a featured interview, Doug Whatley, CEO of BreakAway Games, talks us through the ups and downs of developing serious games, as well as some of the technical issues involved (page 25). Any unanswered questions that may remain should be addressed at the Serious Games Summit within this year's GDC.

## GDC GETAWAY

The run-up to the Game Developers Conference is always an exciting time, and this year is no different, as our eager staff independently peruses the vast range of lectures, roundtables, and tutorials

scheduled for the 2005 conference, newly moved from San Jose's convention center to the heart of San Francisco at the Moscone Center West.

If the shift out of Silicon Valley and into the eclectic streets of the city by the Bay isn't enough, we've outlined some of the other changes to the conference that we think are particularly neat as well. GDC's event organizers have taken pains to secure several top Japanese developers as speakers; they've added a conference web site composed entirely in Japanese too.

In addition, the new "Future Vision" track promises some piquant futurist ruminations for the game industry's long-term prospects.

## TICKING HANDHELDS

Speaking of future visions, as we continue to forge into 2005, and with the handheld next-generation finally ticking over, it's likely that the big question on everyone's mind is, "When will the next-generation consoles finally arrive?" Will they be black or taupe in color? Will they have four controller ports or seven? A select few of you probably already know the answers to these questions, but the rest of us have been waiting for quite some time now.

The good news, however, is that we shouldn't have to wait too much longer for public pronouncements of a next-gen nature from the Big Three. Though launching a next-gen console first doesn't guarantee its success, there are millions out there who will buy it simply because it's the next big thing. And there's nothing hardware manufacturers adore more than a sweet, sweet advantage in hardware installed bases. It attracts exclusive developers, makes your first-party titles sell more, and makes it much more likely that Paris Hilton will theme her accessories collection around your console's color scheme.

The rush to create bigger, faster, and better hardware un-nerves some who believe it to be an arms race, which increasingly hinders the ability to make risky, low-budget games that look competitive. Conversely, when news of customers flooding stores for the new hardware hits the media worldwide, it will only raise the industry's profile. And ultimately, being state-of-the-art is probably a positive thing for games, as long as we can find ways to make money without losing soul, while on the dizzying rush to hyperrealism. ❖

—The Game Developer team

# Stay one step ahead.

**Come check out Alias MotionBuilder 6  
and Maya® 6.5 at a city near you.**



**SEATTLE**  
February 16

**VANCOUVER**  
February 17

**MONTREAL**  
February 23

**AUSTIN**  
February 24

**CHICAGO**  
March 1

**LOS ANGELES**  
March 3

**SAN FRANCISCO**  
March 10

**Alias MotionBuilder 6**, recognized as the foremost 3D character performance and animation system for game, film and broadcast production, has taken the next step in animation software with the release of MotionBuilder 6.

**In this release**, Alias has added new character performance and animation technology, pipeline tools, and workflow enhancements. MotionBuilder 6 is truly dedicated to animation...from its unique real-time performance and full-body IK rigs, to its story timeline and integration with your preferred 3D tools. Try it and you'll discover the difference Alias MotionBuilder 6 can make in your creativity and productivity.

Rated **P** for **PLAY** tour

**POWER, PERFORMANCE AND PRECISION**  
Visit [www.alias.com/p4play](http://www.alias.com/p4play) for more details.

Alias®  
**MotionBuilder®**

  
[www.alias.com](http://www.alias.com)

AlienGirl asset © M. Bortolino. All rights reserved.

© Copyright 2004 Alias Systems Corp. All rights reserved. Alias, Maya and the swirl logo are registered trademarks of Alias Systems Corp. in the United States and/or other countries. MotionBuilder is a registered trademark of Systèmes Alias Québec Inc. in the United States and/or other countries. All other trademarks mentioned herein are the property of their respective owners.

## PSP LAUNCHES

**WITH JAPANESE THE LAUNCH OF ITS NEW PSP** handheld console on December 12, Sony declared its intentions to carve out a slice of the pocket gaming pie. Some six games were released alongside the powerful console, with its wide screen, near-PlayStation 2 quality graphics, analog control, and wireless gaming, but the sales can't match that of the recently launched Nintendo DS. Sony shipped around 510,000 hardware units in less than a month, only nearly matching the first-week sales of Nintendo's competitive system. This isn't due to disinterest, however; the complex GPU takes so much time to manufacture that supply cannot keep up with demand. Seizing the opportunity, Nintendo has been stepping up its production of the DS, managing to ship 1.4 million units in North America alone before the end of 2004.

As a result of the Japanese shortage, with preorders still necessary in order to purchase the PSP, speculation has arisen about whether Sony can still meet the likely simultaneous March launch in North America and Europe, as outlined in Sony's press event at CES in January. The company had originally promised to ship some 3 million units by April 2005, but with its current rate of production, this number may not be achievable. Developers remain optimistic though. "It's a challenging thing, I mean, Sony is entering the handheld game market for the first time," says Karthik Bala, CEO of Vicarious Visions, "and I think that they certainly have their



share of challenges. I think what they're doing is really ambitious, and if done well, could see growth in the overall handheld market, along with Nintendo."  
—Brandon Sheffield



## PETER MOLYNEUX, OBE

**PETER MOLYNEUX, THE FOUNDER** of game developer Bullfrog Software and creator of games including POPULOUS, FABLE, BLACK & WHITE, and DUNGEON KEEPER has been awarded an Order of the British Empire (OBE) in the UK's New Years Honors list.

Molyneux, who now heads up Guildford, England-based Lionhead Software, commented to BBC News Online, "It's come completely out of the blue. I

never would have guessed that I'd have that kind of honor."

The honors are "awarded on merit, for exceptional achievement or service," and chosen by the Queen on the advice of the Prime Minister. The Order of the British Empire was originally created by King George V in 1917 to award civilians helping the war effort who couldn't be given military medals.

Other OBEs were simultaneously awarded to prominent British figures including golfer Colin Montgomerie, Olympic yachtsman Ben Ainslie, and John Shepherd-Barron, inventor of the ATM, alongside other honors including MBEs, CBEs, and knighthoods.

—Simon Carless

## AUCTIONING ACCLAIM

**FOLLOWING ACCLAIM'S FINANCIAL** bankruptcy announcement on September 2, 2004, the company's physical assets were liquidated as well. On December 6 and 7, Maltz Auctions sold off the items, which ranged from office furniture, kitchen appliances, and grandfather clocks, to computers, roughly 43,000 early and complete game titles, and rolls of

"Property of Acclaim" tape. Even the Acclaim building, conveniently located at 1 Acclaim Plaza, Glen Cove, N.Y., was up for bidding.

While THQ has picked up the rights to JUICED, Acclaim's other licensed titles, notably 100 BULLETS and THE RED STAR, shall remain in limbo until a buyer surfaces.

—Brandon Sheffield



PHOTO OF ACCLAIM'S ASSETS TAKEN BY FRANK CIFALDI

# SIMS 2 GETS HACKED

## ALL IS NOT WELL IN THE SIM

unbeknownst to most, the house universe. Teen Sims are getting pregnant, Sim spouses are no longer jealous of polygamy, and mysterious espresso machines are doling out a substance that simultaneously fulfills Sims' every need. And it all began with a dishwasher named Candace.

Astute SIMS 2 hackers implemented the above changes within their own houses, then uploaded them to publisher Electronic Arts' house-sharing server. But when downloaded,

the house will infect the player's entire neighborhood with its properties. So if one dishwasher is named Candace, every dishwasher in that player's community will be named Candace. As of press time, EA has yet to figure out a way to combat this virus-like spread, though so far all hacks have been essentially benign—amusing to some, annoying to others. But of course, where the white hat hackers lead, the black hats follow.

—Brandon Sheffield

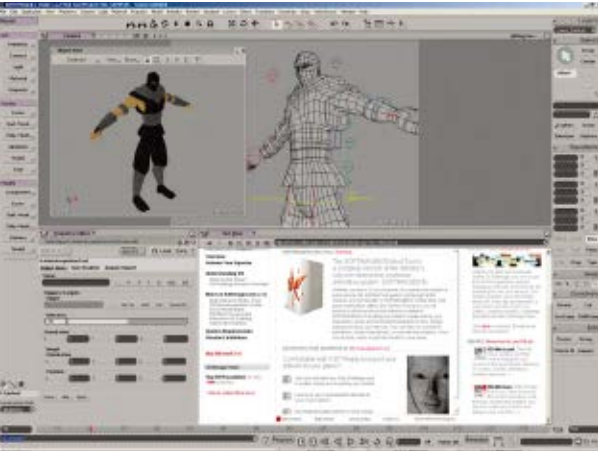


Image courtesy of Softimage Co. and Avid Technology Inc.

# SOFTIMAGE RELEASES MOD TOOL

**DEVELOPERS WANTING TO** tinker with the massively powerful capabilities of the Valve Source engine can now fool around with a new, free modding tool from Softimage XSI-maker Avid Technology.

Part of the Softimage line, the Mod Tool, which was released in late

December and uses Valve's Source software development kit, allows players of the first-person shooter HALF-LIFE 2 to create their own characters, props, and effects. You can also use plug-ins to export modded content to other Valve Source engine-powered

titles. And the tool has the same normal-mapping capabilities as Softimage XSI 4.2.

Softimage's Mod Tool is available as a free download from the company's web site: [www.softimage.com](http://www.softimage.com).

—Jill Duffy

# MEQON GOES XBOX

**MEQON RESEARCH, SWEDISH MIDDLEWARE CREATOR,** recently announced that the company will be providing middleware for Xbox, as well as its existing PlayStation 2 and PC offerings, releasing a new version of its Meqon Game Dynamics software development kit (SDK).

The SDK specializes in fluid dynamics, vehicle handling, realistically modeled human and animal bodies, and includes a real-world physics engine off the shelf.

Companies already using Meqon's physics middleware include 3D Realms, who has licensed the software for the currently-in-development DUKE NUKEM FOREVER, and Black Element, which uses Meqon's middleware in the PC action adventure title SHADE: WRATH OF ANGELS.

—Staff



## calendar

### GAME DEVELOPERS CONFERENCE

Moscone Center West  
San Francisco, Calif.  
March 7–11, 2005  
Cost: \$150–\$1,975  
[www.gdconf.com](http://www.gdconf.com)

### INDEPENDENT GAMES FESTIVAL

Moscone Center West  
San Francisco, Calif.  
March 7–11, 2005  
Cost: included in GDC registration  
[www.igf.com](http://www.igf.com)



# liberate

## your game's potential

with anti-piracy security.

**HASP**<sup>®</sup>  
S O F T W A R E D R M

Introducing the HASP family of products for game publishers!  
Increase revenue and profitability while reducing operational costs through strong copy and IP protection, controlled use of software, beta versions, and secure software distribution. Plus, flexible licensing options that enable selling the way your customers want to buy.

- Hardware and software-based solutions
- Unparalleled ease-of-use
- Flexible licensing models
- Strong anti-piracy protection
- Greater satisfaction for end-users

Visit [HASP.com/Liberate](http://HASP.com/Liberate) for white papers, on-line demo and Developer/Evaluation kits.

**North America:** 1-800-562-2543, 847-818-3800 or [HASP.us@eAladdin.com](mailto:HASP.us@eAladdin.com) **International:** +972-3-636-2222 or [HASP@eAladdin.com](mailto:HASP@eAladdin.com)

**UK:** [HASP.uk@eAladdin.com](mailto:HASP.uk@eAladdin.com) **Germany:** [HASP.de@eAladdin.com](mailto:HASP.de@eAladdin.com) **Benelux:** [HASP.nl@eAladdin.com](mailto:HASP.nl@eAladdin.com) **France:** [HASP.fr@eAladdin.com](mailto:HASP.fr@eAladdin.com)

**Spain:** [HASP.es@Aladdin.com](mailto:HASP.es@Aladdin.com) **Asia Pacific:** [HASP.as@Aladdin.com](mailto:HASP.as@Aladdin.com) **Japan:** [HASP.jp@Aladdin.com](mailto:HASP.jp@Aladdin.com)

©2005 Aladdin Knowledge Systems, Ltd. Aladdin and HASP are registered trademarks of Aladdin Knowledge Systems, Ltd.

 **Aladdin**<sup>®</sup>  
SECURING THE GLOBAL VILLAGE



## GAMEBRYO 1.2

TOM WHITTAKER

### MIDDLEWARE MAKES SENSE. CHOOSING

an appropriate middleware solution will save development time and money. When it comes to rendering engines there are several offerings on the market. Gamebryo and RenderWare gravitate to the top of the list of professional engines. Both provide dedicated support and have a track record of commercially successful titles, although RenderWare is now owned by Electronic Arts. Regardless of how that can potentially affect you, both engines should be on your short list of products to evaluate.

Gamebryo provides a general purpose graphics rendering engine. Based on a scene graph architecture, Gamebryo's graphic engine is easy to use and produces commercial results without requiring you to develop and maintain your own engine. Shader and fixed function rendering pipelines are well supported and work appropriately on each platform. Gamebryo provides an ample amount of tutorials and demos for using the engine, including shadow maps, stencil shadows, matrix palette skinning, object picking, animation, background loading and other examples. It also provides tools and developer support.

### SHADERS

Gamebryo's shader system is clearly one of its strong points. At the highest level,

FX files can be used directly on the PC, giving you immediate access to all the shaders in the public domain provided by ATI and Nvidia, as well as the ability to rapidly prototype new effects using those tools. A custom shader format is also provided that has the added advantage of working directly on the Xbox, making simultaneous PC and Xbox development a snap. At the lowest level, Gamebryo provides an abstract C++ interface that allows you virtually limitless control of your shader. Shaders developed in C++ can be compiled into dynamic libraries so that they can be used by the rest of the Gamebryo tool-chain, including the scene viewer and the material editor.

### TOOLS

Gamebryo provides both a platform scene viewer and an animation tool. The scene viewer renders models and displays the complete scene graph information. While the viewer is useful for tracking down asset bugs, it provides a read-only view, therefore modifications must occur in your authoring tool. Editing exported assets can potentially break your art pipeline and automation systems, but it's a useful feature for debugging and tweaking parameters quickly. Extending the scene viewer to

display more information and allow editing is straightforward. The animation tool displays animations to let artists configure and preview a variety of animation blends. NDL updated the animation viewer in version 1.2 to make blends easier to manipulate.

The exporter provides a component framework for exporting and processing data during export. Out-of-the-box components include scene graph optimization, bounding volume generation, triangle stripping, skin partitioning, portal conversion, and others. The exporter allows these components to be configured and saved into profiles to minimize the tedious button pressing a developer must endure every time she or he exports a model. The modular plug-in architecture of the component framework allows seamless extension of the Gamebryo exporter functionality. This makes it easy to export game-specific data or integrate application-specific optimizations without needing to write a full exporter. The component framework provides a lot of flexibility.

Gamebryo provides its own custom material. This material exposes all the configurable aspects of NDL's built-in shaders to artists. It also lets application-defined shaders become attached and configured. Additionally, a platform viewer allows artists to stay productive by viewing their assets on a target platform with a single button press from their modeling package.

### ANIMATION

From 3DS Max and Maya, you can directly export and play animations in Gamebryo, which also supports bone and morph-target animations. Animations can be tagged with event code, making it easy to play animations or trigger other game events, such as sound or graphic effects. In version 1.2, NDL added the general blending of animation sequences with a priority system. Animation is not limited to character animations. Almost any parameter in Gamebryo can be animated directly in the modeling package, including lighting values,

### GAMEBRYO 1.2



#### STATS

##### NDL

1506 East Franklin St.  
Suite 302  
Chapel Hill, N.C. 27514  
[www.ndl.com](http://www.ndl.com)

#### PRICE

\$50,000 per SKU  
\$25,000 maintenance per year per SKU (includes 2 updates, phone and email support)

#### SYSTEM REQUIREMENTS

##### Supported programming environments:

- Windows. Visual Studio 6, Visual Studio .NET 2003
- Xbox. Visual Studio .NET or .NET 2003, Microsoft Xbox SDK Dec. 2003 version
- PlayStation 2. CodeWarrior for PlayStation 2 version 3.0.1
- GameCube. CodeWarrior for GameCube version 2.6, ProDG for GameCube version 3.9.3

##### Supported art environments:

- Discreet 3DS Max 6
- Alias-Wavefront Maya 5

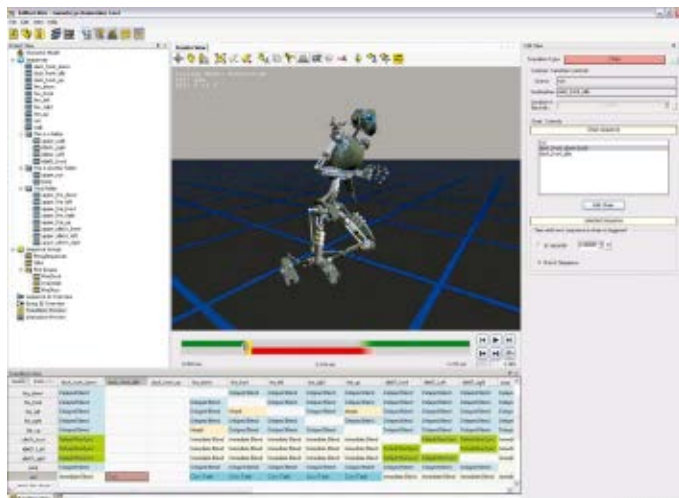
*For additional details about Gamebryo's system requirements, please visit NDL's web site.*

#### PROS

1. Multi-platform shader system.
2. General purpose animation system.
3. Fast and informative developer support.

#### CONS

1. Lack of animation compression.
2. Patches are frequently administered via cut-and-paste information from e-mails and forums.
3. No memory management hooks.



In the Animation Tool, the Render view can be displayed alongside the multiple other views too.



Gamebryo 1.2 includes shadow-map features.

material parameters, or arbitrary shader parameters.

A glaring omission in Gamebryo's animation system is any sort of keyframe compression. Keyframes are stored at a constant rate and consume needless amounts of memory and resources. With such a naive method of storing keyframes, character animation data can quickly chow down even a generous memory budget. Until Gamebryo implements this feature (which NDL says is on its roadmap), a straightforward solution would be to integrate a third-party animation system.

### SUPPORT

One of the key components to any middleware is developer support. It's not a matter of if something will go wrong, but what to do when it does. NDL provides full source code, which goes a long way toward tracking down problems. Posts from other developers and NDL staff provide useful information in online forums, including mini-patches and bug support. E-mail is fast and responsive, generally in the range

of three to four hours. NDL routinely solicits comments, addresses concerns, and gives informal updates on the engine's direction.

An exception to the high quality support is the lack of timely updates and patches. Fixes are commonly released as code snippets posted on the forums or sent via e-mail. Beta and major releases are released infrequently. Read-only access to NDL's source control would allow developers to grab the current state of the engine, merge in branches as needed, and track updates. Gamebryo does not support any method by which developers using certain applications can install the program's own memory allocation functions; hence, tracking and optimizing memory usage is needlessly difficult. Gamebryo does provide some internal memory tracking functionality, but it requires a wholly separate build configuration and is instrumented in a way that can be incompatible with your own game's memory manager. To exacerbate the problem, scene graph architectures like Gamebryo's can create

large numbers of small allocations to accommodate their highly dynamic nature. This is an area where Gamebryo needs to make some effort to help developers squeeze every last byte out of platforms with tight memory constraints.

### BACK TO BASICS

The learning curve for Gamebryo is low for both artists and programmers. Solid documentation will get you up and running quickly, and the source code is well commented and soundly structured for those times that you really need to investigate the nitty-gritty. Integrating shader and rendering effects is effortless. Gamebryo removes the burden of developing and maintaining a rendering engine while allowing you to concentrate on game play. ❖

**TOM WHITTAKER** is a programmer at Firaxis Games, which recently shipped *Sid Meier's Pirates!* You can reach him at [twhittaker@gdmag.com](mailto:twhittaker@gdmag.com).

**NIKITOVA**  
THE GAME OF CREATION

**Custom Programming**  
RenderWare, PS2,  
XBOX, PC, PSX  
Symbian, J2ME,  
Brew, SMS

**Character & Object Modeling**  
Character Animation,  
Level Design,  
FMV & VFX

Meet us at:

Game Development Outsourcing Leader  
info@nikitova.com +1 (773) 913-8015 www.nikitova.com

## Slow C/C++ Builds?

**IncrediBuild** accelerates C/C++ builds by distributing compilation tasks across the network, cutting down build time by 90% and more!

Download FREE, Fully Functional 30-Day Trial!

Build Monitor: Hexedit | HexEdit | Win32 Debug | Compiling...

- Simple setup, requires no changes in code or settings
- Fully integrated with Visual Studio 6.0 and .NET IDE
- Supports Win32 and Xbox builds

**XOREAX**

[www.xoreax.com](http://www.xoreax.com)

# GAME DEVELOPERS CONFERENCE

## 2005 PREVIEW

❖ **EACH YEAR, AS THE FIRST HINTS** of springtime bloom vicariously, game developers make a beeline for the Bay Area, like, well, bees to honey. This year is no exception, as developers will be buzzing to the 19<sup>th</sup> annual Game Developers Conference March 7 through 11, hosted in San Francisco's Moscone Center West.

In this preview guide, we, the editors of *Game Developer* (operated by CMP Media's Game Group, which also produces GDC) present an independent

look at the show, highlighting some of the changes taking place in this year's agenda, and each picking five lectures, roundtables, and tutorials that we think will be the most noteworthy, informative, or contemplative.

Although the conference has expanded over nearly two decades, mini-conferences continue to flourish within the body of GDC, with GDC Mobile returning to shed some light on the seemingly booming mobile

games market. Additionally, the Serious Games Summit for government, health, education, and so-termed "alternative" uses—which spun off into a stand-alone conference in fall 2004—will be held again at the conference. And the International Game Developers Association (IGDA) will sponsor a day-long Quality of Life summit to discuss the pressing issue of the often questionable working conditions in the game industry.

—Simon Carless



### THEME TRACK: FUTURE VISION

One of the most notable new additions to the conference this year is a themed track called Future Vision. Although the complete list of speakers is not yet finalized as of press time, the conference brochure says the track involves "creative artists from a range of cultural media, such as film, music, design, and games, discussing their visions of the future of interactive entertainment."

This multimedia, multi-disciplined approach will enable prominent game creators—such as Will Wright, *PARAPPA THE RAPPER*'S Masaya Matsuura, and Peter Molyneux—to share their ideas about what's coming to games in the near and far future, as opposed to dealing exclusively in analysis of what's happening now. The style of this track will also let speakers from

outside the game business put forth some fresh perspectives and discuss their predictions for the game industry's future. Confirmed speakers include John Underkoffler, a science and technology advisor for feature films, including *Minority Report* and *The Hulk*, and Remington Scott, supervisor of computer-generated performance animation for motion pictures such as *The Lord of the Rings: The Two Towers* and *Spider-Man 2*, who will discuss digital human acquisition for next-generation games. And although nobody can actually predict the future, it's certainly entertaining to hear notable speakers draw from current trends, while doing just a little crystal ball-gazing of their own.



## EAST MEETS WEST

A huge emphasis has been placed on Japanese creators in this year's conference, since the conference's early pre-planning stages through the event's final lineup of speakers. Many of the world's leading titles are still developed in Japan, a country which has, at least anecdotally, a far higher percentage of the game sales market than comparable industries, such as movies or music. But Eastern game designers seldom have a chance to interact with their Western counterparts.

The event organizers have taken multiple steps to court more Japanese developers this year, beginning with a Japanese version of its web site ([gdconf.com](http://gdconf.com)) to help attract attendees, and a consciously beefed-up list of prominent Japanese speakers. GDC promises simultaneously translated lectures from KATAMARI DAMACY creator Keita Takahashi, RESIDENT EVIL 4 lead artist Yoshiaki Hirabayashi, VIEWTIFUL JOE creator and Clover Studio president Atsushi Inaba, and SILENT HILL producer Akira Yamaoka, as well as a rare audience with FINAL FANTASY composer Nobuo Uematsu. Anyone who is captivated by some or all of these titles will appreciate this rare opportunity to hear about some of the aspects of development direct from the creators' mouths.

## GAME DEVELOPERS CHOICE AWARDS, CONFERENCES, AND KEYNOTES

Following the fun and games that were this year's Spike TV Awards—an evening that awarded worthy nominees, but was otherwise adversely affected by its celebrity-emphasizing, creator de-emphasizing, MTV-Lite presentation, which left a sour taste in the mouth—the fifth Annual Game Developers Choice Awards hopes to redress the balance.

The awards recognize an IGDA-nominated raft of top innovators in a multitude of categories, from writing to audio to more specific accomplishments, such as First Penguin (awarding “the courage and bravery of a developer who tested the proverbial waters, uncertain of success or failure”). Most notably, the awards are voted on by IGDA members (although Snoop Dogg is absolutely eligible for membership), meaning your peers and colleagues select the winners, which makes the prize that much sweeter.

With the massive number of sessions to attend at GDC, it's almost possible to forget about the Game Developers Conference Expo; but the three-day show is free to GDC attendees. A reduced-price Expo-Only Pass gets you access, too. A gigantic range of publishers, developers, middleware companies, peripheral manufacturers, book publishers, and universities is prepared to pack into the Moscone Center West this year, so there will be plenty to check out. We're looking forward to the treasure trove of free key chains and brightly colored trinkets at the very least.

As for what else precisely is in store for the Game Developers Conference, rumors swirl of keynotes from at least one of the major hardware manufacturers, likely with new announcements of some kind. Whether this is strictly correct, we'll just have to wait and see, but it just wouldn't be GDC without a little rumor-mongering about what announcements major players such as Microsoft, Nintendo, and Sony will make. Personally, we heard that Nintendo will be launching a DeLorean-powered console time machine that boots up at 44mph, not the outdated, less efficient 88mph—but then again, we've been getting our tips from insalubrious street corners recently. So you're better off just turning up and finding out for yourself.

CONTINUED ON PG 12



# independent games festival 2005

THE INDEPENDENT GAMES FESTIVAL, now in its seventh appearance at the Game Developers Conference, is showcasing another diverse and intriguing range of independent PC games—or rather, almost all PC, given this year's appearance of an indie console title, The Behemoth's 2D console side-scroller, ALIEN HOMINID, which started life as a Macromedia Flash game.

Overall, there are plenty of highlights, from Chronic Logic's physics-based platformer GISH (an embryonic entry in last year's IGF), to massively multiplayer CCG STAR CHAMBER, to Digital Eel's randomized space strategy sequel, WEIRD WORLDS: RETURN TO INFINITE SPACE. There's even room for

quirkier entries, including Veggie Games' STEER MADNESS, in which you play a car-driving cow who “rescues rabbits, delivers soy milk, [and] protests against fur.”

Increasingly, we hear success stories from the IGF. Vicarious Visions, now converting DOOM 3 to the Xbox, got a break as one of the early prizewinners. Last year's Project Goldmaster winners Flashbang Studios have completed a Sealab 2021 game for Adult Swim/Cartoon Network. And at least two other notable 2004 success stories have cropped up: Oasis has a deal with leading web-game developer PopCap, and YOHOOH! PUZZLE PIRATES has already grabbed almost 10,000 monthly subscribers, as well as licensees in Germany and China.

The pot is at \$40,000 in prizes, including two \$15,000 grand prizes for winners of the Open (more than 15 megabytes) and Web/Downloadable (less than 15 megabytes) categories. And with another wide array of Student Showcase entries, the festival is one the most entertaining sidebars to this year's GDC. Check out the games, arrive at the IGF Awards (held directly before the Game Developers Choice Awards), and revel in the indie-ness of it all.



IGF finalist GISH.

—Simon Carless

Learn why  
300,000 users

can't stop  
talking about

our 3d Motion  
Controllers.



"I am blown away with how easily I can navigate around in my scenes using a 3Dconnexion Motion Controller—it's intuitive and natural. My work flow is way faster and I wouldn't want to go back to working without one."

Amber Reddin,  
3D Artist/Animator

gamedeveloper  
**FRONTLINE**  
FINALIST '04

Build complex game scenes or generate character animations faster and more comfortably with a 3Dconnexion Motion Controller.

Try one today at:  
[www.3dconnexion.com/try\\_buy/GDC.htm](http://www.3dconnexion.com/try_buy/GDC.htm)  
or come see us at GDC 2005, booth 942.



 **3Dconnexion**  
A LOGITECH COMPANY

## EDITOR SIMON CARLESS'S PICKS

### Rolling the Dice—The Risks and Rewards of Developing **KATAMARI DAMACY** (lecture)

*Keita Takahashi*

**KATAMARI DAMACY** has been, without question, the sleeper critical hit of 2004, and it should be fascinating to hear Takahashi talk about how a deeply experimental and innovative title made its way to release through what the developers call "Namco's corporate system."

### Academic Insights: What Researchers Can and Can't Tell You About Your Games (IGDA panel)

*Dmitri Williams, James Paul Gee, Jesse Schell, Edward Castranova, Constance Steinkuehler*

Is ludology ludicrous? Do only economists care about analyzing MMO economies? This panel seems like it will pose the right questions about academic research as a design resource, and should be well worth checking out.

### The Future of Content (lecture)

*Will Wright*

"Will Wright discusses the future of content in the games industry," reads the description for this lecture. What a reduced statement for a man who conceptualized **SIM CITY** and **THE SIMS**, two all-time great games with almost completely differing gameplay. Wright is eminently worth listening to.

### How Can MMOs Develop Mass Appeal in the U.S.? (panel)

*Rich Vogel*

The ever-controversial concept of a mass market continues to dog the MMO genre, and Sony Online's Rich Vogel chairs a panel which looks at what it'll really take for the first million-subscriber MMO in the U.S.—**WORLD OF WARCRAFT**, perhaps?

### Audio Production for **HALO 2** (lecture)

*Marty O'Donnell, Jay Weinland*

**HALO 2** has some of the best audio ever used in a game, and this fascinating-looking lecture proposes to examine the custom audio engine for the title, as well as all the aspects of sound effects and music co-ordination that went into creating its audioscape.



## DEPARTMENTS EDITOR JILL DUFFY'S PICKS

### Accessible Game Design:

#### Reaching Disabled Gamers (IGDA roundtable)

*Michelle Hinn*

Philosophically, and from a design standpoint, how can developers make an interface that is, literally, universally accessible? Michelle Hinn from the University of Illinois is prepped to use this roundtable to provoke discussions on universal design in the game industry. [And you thought females were disenfranchised from games ... ]

### Casual Games Summit (day-long tutorial)

*Steve Meretzky, Dave Rohrl, Scott Kim, Patricia Pizer, Stephan Smith, Dan Scherlis, John Welch, Kent Quirk, Brad Edelman*

Bring on the **TETRIS**! Those of us who fall asleep during Monopoly matches and throw the game **Risk** after three monotonous hours—we believe in casual games. We believe in their profitability. This full-day tutorial is aimed at teaching how to make casual games for four major markets: retail, online, arcade, and mobile, although anyone interested in mobile might prefer to attend sessions in the Mobile Track.

### Puzzle Pirates: Lessons From an Indie MMO (lecture)

*Daniel James*

Hopefully, Daniel James will wear his signature pirate hat. Even better, he'll weave the tale of **YOHOHO! PUZZLE PIRATES'** origin—how it came into being since its appearance at IGF and how it survives both operationally and technically.

### Uses and Misuses of Middleware (roundtable)

*Marq Singer*

Though targeted at an intermediate level audience, my hunch is that practically anyone in the game industry (or who aspires to work in the industry) will benefit from this broad discussion of middleware—a term that is at times as extensive in meaning as it is in application. The meat-and-potatoes of this roundtable will likely come from attendees' questions, so arrive with lots to ask.

### Counting Women: The Dollars and Cents Behind Female Gamers (IGDA panel)

*Clarinda Merripen, Schelley Olhava, Aleks Krotoski, Mia Consalvo, Richard Ow*

One can purport to analyze the purchasing power and buying habits of female players in order to increase market share, but the figures are always criticized, disputed, and nullified. I've yet to hear a totally convincing argument, but I also believe there's one to be made. Until I find it, I'll continue to attend lectures and panel discussions such as this one.

CONTINUED ON PG 14



# Business As Usual



**GDC 2005**  
**BOOTH 422**

**RenderWare**

GDC 2005 | March 9-11 | Booth 422

## ASSISTANT EDITOR BRANDON SHEFFIELD'S PICKS

### **Why Isn't the Game Industry Making Interactive Stories?** (panel) *Andrew Stern, Neil Young, Warren Spector, Michael Mateas*

This panel discussion will focus on what it would take for the game industry to create a mass-appeal interactive story, and in fact, whether it can even do so at this stage. With such an all-star cast, the talk should be entertaining at the very least.

### **Practical Implementation of SH Lighting and HDR Rendering on PlayStation 2** (lecture) *Yoshiharu Gotanda, Tatsuya Shoji*

Two top guns from tri-Ace will share their tricks of the trade, specifically in regard to spherical harmonics lighting and high dynamic range rendering. As a programming track, this is a rare, almost unheard of look into the deeper end of Japanese game development methodology.

### **Composition & Sequential Storytelling: Using Film Language for FMV Sequences** (day-long tutorial) *Justin Evans*

Even the most expensive CG cut-scenes will look like amateur hour if you can't direct. In this day-long workshop, Mystic Arts founder Justin Evans shares some techniques (composition, editing, and sequencing) from the film industry that should help create a sense of immersion and excitement in FMV work, or if all else fails, allow one to fake competence.

### **Gripping Game Design: The Mood and Ambience of SILENT HILL** (lecture) *Akira Yamaoka*

SILENT HILL is one of those few games that is universally lauded for its use of sound design to advance the video game medium beyond the stage of simply sounding like a movie. Producer Yamaoka will share his thoughts on the integration of sight, sound, interactivity, and engrossing storytelling, and possibly teach us about rock 'n' roll, if we're good.

### **Game Design Challenge: The Emily Dickinson License** (panel) *Eric Zimmerman, Peter Molyneux, Will Wright, Clint Hocking*

The ever-popular Game Design Challenge has returned—an event in which prominent game designers must create a concept for an unusual game with a specific theme. This time around, it's the poetry of Emily Dickinson. This session has a tradition of excellence, so if it fails to be simultaneously humorous and educational, the world may stop spinning.



## ASSISTANT EDITOR, GAMASUTRA.COM, QUANG HONG'S PICKS

### **FABLE: Lessons Learned** (lecture) *Peter Molyneux*

A grand vision from one of the industry's grand visionaries, Molyneux's big ideas will meet reality when he lunges into a postmortem of Lionhead's first console game. It should be fun to watch.

### **Experimental Gameplay 2005** (lecture) *Jonathan Blow*

In this perennial must-see, Blow goes outside the box and sometimes nowhere near the box, with ideas that challenge the tried and true and inspire the lot of us.

### **Overcoming the Challenge of Making a Creatively and Financially Successful New Game** (lecture) *Atsushi Inaba*

From a huge and complicated control console, to playing the cinema, to bringing color to a gray world, Inaba's ideas challenge fiscal common sense and still come out in the black. His wisdom in this lecture will focus in on the relationship between producer and creator, and how each one's goals can get in the way.

### **The Near Future of Media Distribution** (lecture) *Masaya Matsuura*

We've seen a new model emerge for the online distribution of music. Will games follow suit to iTunes ... or Napster? What can be said for next-gen consoles? This business-gearred lecture might shed some light on the situation. Don't change that channel.

### **Feature Film Performance Animation and Digital Human Acquisition for Next Generation Games** (lecture) *Remington Scott*

The further convergence of Hollywood and the game industry is highlighted in this look at producing more "realistic" animation for the day when THE LORD OF THE RINGS game will be visually indistinguishable from *The Lord of the Rings* movie.







SOFTIMAGE | XSI®

Modify your world with the  
SOFTIMAGE | XSI Mod Tool

“MOD developers now have a free, professional-level tool to create game content. We used XSI to create **Half-Life 2**, and I can't wait to see – and play – what the community that created Counter-Strike, Team Fortress, and Day of Defeat will come up with now.”

**Gabe Newell,**  
Valve founder and C.E.O.

The new XSI Mod Tool gives modders full access to all the professional features available in **SOFTIMAGE | XSI**.  
Download a **FREE** copy today: [softimage.com/Mod](http://softimage.com/Mod).

See how the Mod Tool can extend the life of your game at GDC 2005: Avid Computer Graphics Booth 413.  
For more details, visit [softimage.com/GDC05](http://softimage.com/GDC05).

**I am 4.** the future of animation.



[softimage.com/games](http://softimage.com/games)

© 2005 Valve Corporation. All rights reserved. Valve, the Valve logo, Half-Life, the Half-Life logo and the Lambda logo are trademarks or registered trademarks of Valve Corporation.

© 2005 Avid Technology, Inc. All rights reserved. SOFTIMAGE, Avid and XSI are either registered trademarks or trademarks of Avid Technology Inc. in the United States and/or other countries. All other trademarks contained herein are the property of their respective owners.

**Avid**  
computer graphics

# INCREASING THE BOTTOM LINE: WOMEN'S MARKET SHARE

» **WOMEN PLUS GAMES EQUALS PROFITS.** It seems like such a simple formula. Women have money to spend. As with the rest of the world, they are seeing games as one of their main sources of entertainment. Tap into their desires for fun, and—poof—instant profits.

The industry needs to implement a reasoned, comprehensive business plan to increase female market share. Change comes with a deep understanding of the facts, such as understanding how much power women hold in the economic world, so the first step is to take a hard look at the consumer power of women and its relation to the game industry.

Second, the industry needs to fix its image. Attraction is three-quarters of the profit, and the industry must define itself as a pastime for everyone—not just boys and men.

The next step falls directly to developers. At all levels, companies need to reflect the markets they want to serve. In order to make games both women and girls enjoy, they should hire women to create them.

Finally, developers need to include content and design that suits women. [Check out the academic and market research included in this article, which provides long- and short-term solutions to improving the gameplay experience for women.]

---

**CLARINDA MERRIPEN** is director of operations at Cyberlore Studios. She specializes in incorporating strategic influences into human resources, IT, finance, and facilities management. You can reach her at [cmerripen@gdmag.com](mailto:cmerripen@gdmag.com).





PHOTO BY JAMIL MOLEDINA

# WOMEN'S MARKET SHARE

**WOMEN: THE NEW ECONOMIC POWERHOUSE**  
**WOMEN HAVE MONEY TO SPEND.** When it comes to entertainment and leisure, women are big spenders. Even in the game market, women are contributing to rapid growth. Given the hyper-competitive atmosphere in the industry, developers who continue to exclude female gamers from their business plans do so at their own fiscal peril, while savvy companies are already developing immediate and long-term changes to court and win women's purchasing dollars.

**MALE MARKETS GO COED.** Women are flexing their purchasing muscle in markets previously thought of as owned by men. In home electronics, 90 percent of women said they shared equally or made the decision for purchases in 2004.<sup>1</sup> According to the Consumer Electronics Association, women spent more on technology than men in 2003 and accounted for approximately \$55 billion of the \$96 billion spent on consumer electronics products. If that's not convincing enough, look at the home improvement giant Home Depot. A 2003 Forrester Research survey found that 45 percent of customers at both Home Depot and Lowe's stores were female. Home Depot, watching its sales slip to Lowe's, actually retooled its strategy recently to welcome women back into its stores.

These industries assumed their markets were largely male until hard data proved them wrong. In light of this sort of newfound reality, companies with a solid business model will change their overall strategic plans to better exploit their actual market—not the one they thought they should market to. Couldn't the game industry benefit from this same scrutiny?

**SHE PLAYS, TOO.** The big players in the game market are beginning to find the same trends in their sales. Sony Computer Entertainment Australia's managing director Michael Ephraim claims, "We've sold 80,000 [copies of PlayStation 2 karaoke game SINGSTAR]; 50 percent have been to teenage girls who have never played games before, and about 30 percent to women over 30."<sup>2</sup>

According to a 2004 Entertainment Software Association survey, 25 percent of console players and 39 percent of PC game players are women. In addition, 40 percent of online game players are women, though casual games are included in this figure.

The assumption used to be that women buy consoles for a son, boyfriend, or husband, or that women don't buy or play "traditional" genres such as action or role-playing games. But that belief just doesn't hold up against the statistics. For instance, a 2002 Jupiter/IPSOS study of teens who play games found that females spend 30 percent of their gaming time playing action/adventure genres, compared to 43 percent of males' gaming time. Putting the same question to adult players finds women outstripping their male counterparts in relative play percentages, 26 percent to 22 percent. Against conventional wisdom, women and girls enjoy action/adventure games.

## STOP DRIVING WOMEN AWAY

The industry's marketing machine defines games as "for men and boys." At its best, the game industry is indifferent to the women's market. Few if any ads show girls together with boys playing games, and fewer still place ads where women and girls would see them. At its worst, the game marketing industry monolithically insults women by calling them "bored housewives,"<sup>3</sup> or, as in a recent *ATV OFFROAD FURY 3* spread, "tearing Mother Nature a new one" (and doing the same to the mud-splattered female sex symbols on the next page).<sup>4</sup>

**NO GAMES FOR YOU.** Marketing translates directly into or away from profits. Here's an example of the power of marketing as a tool to discourage sales: Gareth Schott, a lecturer in the Psychology of Education department at the University of London, studied the effects marketing has on women through Nintendo's campaign for the Game Boy Advance SP in the U.K. None of the women in the study had previously owned or played either the system or the particular game. The participants "were visibly transformed by the gameplay experience offered by the device," Schott says.

After 15 minutes, the women saw images of current ads for the device, namely, a photo of a young man playing his Game Boy Advance in bed next to a sleeping woman. The tagline: "The second best thing to do in the dark." The women then retracted their earlier opinions, going so far as to reverse it despite the experience which had occurred minutes earlier.<sup>5</sup>

Before viewing the ads, they were potential customers;

CONTINUED ON PG 21

## boys will be boys

### THERE'S NO QUESTION: THE GAME

industry knows its market. It's young, white, and male. The industry knows how to reach them, sell to them, and make repeat customers out of them.

What marketing person would ever want to limit the sales of their product? The answer is no one. The truth is that although they know how to reach their market, they don't know how to market to women, a group that could potentially increase their target market by 50 percent.

This doesn't mean we have to put fuzzy kitties on all our covers or paint the boxes pink. It means we have to begin to understand what prevents women from accessing most titles and address those issues first.

Probably one of the biggest factors, and one of the easiest and cheapest to fix, is the hyper-sexualized depiction of women in marketing copy and on box covers. We

should continue to use attractive females in our games and marketing, but we need to use images that are not hyper-sexualized, meaning female figures whose looks aren't exaggerating sexual receptivity. The litmus test: Can you put a male character in the same outfit and posture with the same facial expression without laughing? If not, then you need to reconsider the image you are presenting.

Research has shown that when presented with sexual humor or images that denigrate females, women don't comment or complain. They simply walk away and they take their money with them. This means the devs may have produced the coolest game in the world, but the majority of the female audience will never see it because they won't get past the front door.

Last year, I presented a workshop on gender-inclusive game design, which was attended by 25 participants, 20 of whom

were women. They were all either from the game industry or game-oriented academia and were all self-described "avid gamers." I set up five top selling games for the women to play: *WARCRAFT III*, *HALO*, *HALF-LIFE*, *DIABLO*, and *MAX PAYNE*. The women's assignment was to examine each game and develop a list of ways in which it could have been more accessible to females.

As they began the assignment, it became immediately obvious that none of them had ever played any of the games. They were very hesitant at first to even play, but I insisted they at least get through the tutorials. As they progressed, the attitude quickly turned around and they began to have fun. By the end, *WARCRAFT III* had been unanimously voted "favorite new game," with many attendees vowing to purchase it soon.

But why had they never played such popular games before? We proved that

they found the gameplay fun and challenging, so why hadn't these avid gamers ever played them? When I finally asked them, their answers were fairly uniform. "The cover looked like a boring, guy game," said one. "Its ads made it look like just another game where you beat on each other," said another. "It just looked like a guy game," said a third.

In the end, the simple truth is that marketing sells games. The responsibility of increasing our audiences lies in the hands of marketing. If we are going to continue to grow as an industry we must begin to address those barriers to initial access that currently exist in our marketing plans today. When we do that, we will truly see the unlimited potential of our industry.

—*Sheri Graner Ray, author of Gender Inclusive Game Design: Expanding the Market [Charles River Media, 2003].*

[**Alienbrain** was instrumental in streamlining our asset and code management and provided a consistent environment for our internal and offsite developers. Overall it was a definite plus for the **DOOM 3™** project.]

**Robert A. Duffy** Lead Programmer, id Software

**Starts**

**at**

**\$690**



# Brainpower

**Avid Alienbrain Studio 7.1** has the intelligence to help your team work faster and smarter.

Its intuitive interface tells you more than the what, where and who of an asset. It tells you what an asset references, what it's referenced by, and whether it's buildable, it's optimized, or it's redundant. It knows what platform an asset is for and what should happen to it next. It even knows an asset's location in a texture map, its resolution in level three, and how much damage it inflicts when eaten. Alienbrain knows. You know. Your pipeline knows.

## ASSET MANAGEMENT FOR CREATIVE TEAMS

Witness the power of **Avid Alienbrain Studio 7.1** at GDC 2005:  
Avid Computer Graphics Booth 413.



[www.avid.com/alienbrain](http://www.avid.com/alienbrain)

**Avid**  
computer graphics

© 2005 Avid Technology, Inc. All rights reserved. Product features, specifications, system requirements and availability are subject to change without notice. Avid is a registered trademark of Avid Technology, Inc. in the United States and/or other countries. Alienbrain and the Alienbrain logo are trademarks of NXN Software AG. All other trademarks contained herein are the property of their respective owners.

# ANARK GAMEFACE

Build great UIs in half the time



Anark Gameface, the first professional solution for creating 3D game user interfaces and front ends. Cut your development time in half by building a bullet proof UI pipeline.

#### Who wins?

- **Programmers:** Code the pipeline once and never touch the UI again.
- **Artist:** Use a professional authoring tool with real workflow.
- **Producers:** Save money and reduce schedule risk.

#### Anark Gameface Bundle Includes

- **Anark Studio:** Proven interactive 3D authoring tool
- **Anark Format SDK:** All the tools you need to import Anark UI projects into your existing game engine.

For more information go to [www.anark.com/gameface](http://www.anark.com/gameface) and visit us at the Game Developers Conference booth #944.



Revolutionize Communication with Interactive 3D

[anark.com](http://anark.com)

CONTINUED FROM PG 18

afterward, they were not. The ads sunk any chance for sales. This trend is rampant across the industry, from TV ads to box covers. The bottom line is that current marketing dollars are being wasted chasing these potential buyers away from games.

**REINVENT THE IMAGE OF GAMES.** In several industries, the people behind the markets forcibly tweaked and shoved their companies' public personas in new directions, fundamentally changing their public images from being just a "male thing." Remember when athletic shoes were just for men? Up through the early 1990s, sports sneakers were the province of men. A concerted, inclusive marketing campaign by Nike, Adidas, and Reebok opened it up and vastly increased the overall sales. By 1994, sales to women outpaced men. Here's the best part: Selling to women didn't undercut the men's market—it doubled the number of potential customers.

Changing the image the shoes projected greatly enhanced profits. The game industry needs to follow suit by consciously evaluating the PR it's sending to all markets, not just the male one.

**TARGET WOMEN WITH ADVERTISING.** Publishers spend as much money on marketing as they do on developing games.<sup>6</sup> Yet few of those dollars are targeted directly at women. Conventional wisdom assumes that all new games must be advertised in established game magazines, the cost of which can eat up the majority of the company's marketing budgets. However, according to Ziff Davis's reader demographics, few women read gaming magazines: *Electronic Gaming Monthly* (4 percent), *Official U.S. PlayStation Magazine* (7 percent), and *Computer Gaming World* (4 percent). So how much could sales increase if targeted money was spent to advertise to females?

**EDUCATE RETAILERS.** Publishers and industry organizations should help retailers welcome women into their stores. The traditional PlayStation 2 and Xbox demo kiosks in retail stores appear to be particularly designed to turn women and girls away. Customers who demo the games must learn to play them on the spot in front of others; but girls and women are less willing to take risks when learning something new. They often want to know how something works before trying it,<sup>7</sup> so

these demo stations are often a turn-off to females. Retailers such as Electronics Boutique compound the problem by putting the machine right in the front of the store where there's even more traffic.

Retailers might turn this quandary around by using the same setups in some of the new arcades environments, like chain restaurants and cinemas, which attract as many girls as boys. The arcade games are displayed in open environments and offer alternative game types. And most importantly, women clerks create inviting environments where women and girls don't feel ostracized. In fact, Disney created a virtual theme park, DisneyQuest, with an eye toward "making it fun for everyone." Disney went out of its way to include features that appeals to both boys and girls, such as the Creation Station. As part of the process, they also monitor the number of women who work at the park, believing that more female cast members make female guests more comfortable. Game retailers that want to increase their sales need to be aware of their female consumers.

### REFLECT CONSUMERS: HIRE WOMEN

Business gurus Larry Bossidy and Ram Charlam advise companies to "develop a diverse leadership team to match the global needs of ... business."<sup>8</sup> Tom Peters, in his book *Re-imagine!: Business Excellence in a Disruptive Age* (see Resources), is far blunter. He calls his photos of Fortune 500 company boards a "porn" collection. The pictures of the mostly [white] men are directly at odds with his perception that those in power need to represent their market to understand and profit from it<sup>9</sup>—strong words that those in game development need to take to heart. Currently, women comprise somewhere between 3 and 9 percent of developers in the U.S.<sup>10</sup> and U.K.,<sup>11</sup> far less than the percentage who buy and play games.

**BIRTHING IDEAS THROUGH DIVERSITY.** The more diverse a company, the more experience—in both life and work—a developer has to choose from. This diversity reflects itself in the game's art, design, and programming that developers draw from to make games. During the making of *PLAYBOY: THE MANSION*,

- Women wield \$6 trillion in buying power, which is 85 percent of what the Bureau of Economic Analysis values as \$7 trillion in total personal consumption expenditures. (EBSCOhost, 2002)

- Women influence or more directly control 80 percent of all purchases of both consumer and business goods and services. (*Marketing to Women: How to Understand, Reach and Increase Your Share of the World's Largest Market Segment*, Dearborn Trade Publishing, 2003)

- Women account for 66 percent of all home-computer purchases. ("Where The Bucks Are," *Fast Company*, March 2004)

## industry checklist

### UNDERSTAND THE ECONOMIC POWER AND PURCHASING HABITS OF FEMALE

- Challenge current stereotypes against the real data.
- Don't make assumptions about who will buy and play your game.
- Realize there is profit in selling to women.
- Constantly review the current, overall women's economic trends and plan accordingly.

Book recommendation: Tom Peters' *Re-imagine!: Business Excellence in a Disruptive Age*.

### CHANGE GAME PR AND MARKETING

- Specifically target women and girls in campaigns.
- In non-targeted ads, box covers, and events, consider the reaction of the female audience.

- Use alternative channels, viral marketing, nonstandard web sites, and public events that have a broad appeal.

- Ask industrywide organizations to create publications and training for retailers designed to promote sales to women.

Book recommendation: Faith Popcorn's *EVEvolution: The Eight Truths of Marketing to Women*.

### HIRE AND RETAIN FEMALE DEVELOPERS

- Widen the applicant pools by expanding job searches to non-standard web sites women frequent. Also, consider rephrasing job postings [for example, from "looking for programmer" to "looking for a woman or man to program computer games"].
- Make diversity a priority in the hiring

process. Pay attention to the number of women hired and in the pool.

Reward recruiters and hiring managers who bring more diverse and qualified candidates. Analyze hiring criteria to separate necessary disqualifying characteristics from assumed ones.

- Look at current company retention statistics. Hunt down and change policies which particularly drive women away. Consider job-sharing, flextime, and other benefits that are attractive to women.

Book recommendation: Marcus Buckingham and Curt Coffman's *First, Break All the Rules: What the World's Greatest Managers Do Differently*.

### MAKE GAMES WOMEN WANT TO PLAY

- Scrap the idea that women are a "niche" market.
- Stay current on the academic literature on gender differences in learning styles. You can do this by making easy tutorials standard or including more puzzles in games and tutorials.
- Create as many female avatars as male ones, and make them varied. Give women choices in body type, age, and clothing styles.
- Stay current on marketing data about what women like and don't like and then reference what's popular with girls and women in other media and markets. Better yet, create women-centric content.

Book recommendation: Sheri Graner Ray's *Gender Inclusive Game Design: Expanding the Market*.

# WOMEN'S MARKET SHARE

## RESOURCES

Buckingham, Marcus and Curt Coffman. *First, Break All the Rules: What the World's Greatest Managers Do Differently*. New York: Simon & Schuster, 1999.

Graner Ray, Sheri. *Gender Inclusive Game Design: Expanding the Market*. Hingham, Mass.: Charles River Media, 2003.

Peters, Tom. *Re-imagine!: Business Excellence in a Disruptive Age*. London: Dorling Kindersley Publishing, 2003.

Popcorn, Faith. *EVEvolution: The Eight Truths of Marketing to Women*. New York: Hyperion, 2000.

Tischler, Linda. "Where The Bucks Are," *Fast Company*, March 2004.

Business Women's Network:  
[www.ewowfacts.com/pdfs/chap04/1.pdf](http://www.ewowfacts.com/pdfs/chap04/1.pdf)

Vertis:  
[www.vertisinc.com/about/viewNews.asp?id=136](http://www.vertisinc.com/about/viewNews.asp?id=136)

BBC News:  
<http://news.bbc.co.uk/2/hi/technology/3791983.stm>

Game Advertising:  
[www.games-advertising.com](http://www.games-advertising.com)

The Age:  
[www.theage.com.au/articles/2004/10/14/1097607333470.html](http://www.theage.com.au/articles/2004/10/14/1097607333470.html)

The ESA:  
[www.theesa.com/5\\_12\\_2004.html](http://www.theesa.com/5_12_2004.html)

Cyberlore's lead designer, Brenda Brathwaite, brought up the question of whether it was more or less appropriate for a man to lead a woman to a couch than vice versa. Having a female point of view widened the conversation in a direction it wouldn't have otherwise gone. Having a wider composition of talent increases the chances of appealing to a more broader audience.

**PAY ATTENTION TO THE HIRING PROCESS.** Though illegal to consider gender in the decision-making step of the hiring process, diversity programs are lawful. Any initiative should begin with a systematic assessment of processes, from hiring through termination. For instance, broader job advertising increases the number of women applicants. Gamasutra.com cannot be the only point of contact with the potential candidates simply because candidates already need to be "in the know" to find jobs there. Recruiters and hiring managers need to account for the number of qualified females in the initial pool. Hiring practices need to be reviewed to find out if the criteria inadvertently exclude women. For instance, are the criteria weeding out women who take time away to have children?

**RETAIN WOMEN.** On the retention end, if women are systemically leaving a company, it becomes a matter of financial responsibility. The parties or departments responsible also need to investigate why women are leaving and demand answers from all involved. How are their needs going unmet? Are the demands of the job untenable with the demands of a family? Perhaps job-sharing can be implemented. Is there a perception of inequity? Compensation should be evaluated for equity. Note that all of these techniques reflect proven business and HR practices. A company that asks these questions and enacts its answers proves its value as an employer of choice not only to women but to all its current and potential employees.

## MAKE GAMES WOMEN WANT TO PLAY

Forget Barbie. Drop SHOPPING MALL TYCOON. In fact, skip putting women into a niche market all together. "Niche" is a codeword for "marginalized." The women's market is too big and too vital to be sidelined in a single title or one shelf of the retailers' stores. Developers should make games women want to play and they should begin by looking at the academic and market research and by making powerful incremental changes that have vast effects on the female play experience.

**SHORT-TERM SOLUTIONS.** Fix the small things. A growing body of academic study outlines what makes it easier for women to play games. In Sheri Graner Ray's

book, *Gender Inclusive Game Design* (see the sidebar "Boys Will Be Boys"), she suggests that small changes make big differences. By integrating research regarding the differences in learning styles between females and males, she lists changes developers can make to user interfaces, robust tutorial creation, and availability of female avatars to attract and retain female players. Most changes can be integrated at the design stage with minimal pain to a developer.

It's imperative for developers to read the current academic and market research, then integrate it into their final products. For instance, America Online Games' "Casual Game Report" notes that women like to play games more for "enjoyment or to relieve stress" than to compete. So, it makes sense to create games that focus less on winning and more on exploring or solving puzzles. Women also want choice and flexibility. Scantily clad, big breasted avatars are viewed far more negatively if no widened, one-eyed hags or buff, big-armed gladiatrixes are available. Read the research, and listen to women. It's the only route to pleasing them.

**LONG-TERM SOLUTIONS.** Create women-centered content alongside men's. In the long run, developers need to expand content to include things women enjoy, with a focus on content that incorporates women without excluding men—not niche but inclusive. A July 2004 Sony Computer Entertainment Europe press release stated "the creation of these neutrally-sexed games certainly points to an increasing awareness of women within the gaming industry." The same argument could be made about THE SIMS, DANCE DANCE REVOLUTION, EYE TOY, and SINGSTAR, all significantly successful across genders.

## CHANGE TODAY, PROFITS TOMORROW

Relying on the old assumptions equates to lost potential revenue. Women's interests in games is present, but few developers cash in on it. If developers, publishers, and retailers across the board don't pay more attention to winning this market, it will be lost forever to the companies that are. If women play nothing other than casual games, THE SIMS, and SINGSTAR, they'll become loyal, repeat customers only to the companies that produce those games. The reason why this is so crucial now is because a few (and only the rare few) companies are already winning the women's market share; it's more pragmatic to think you can win a segment of customers before they develop loyalty to a brand, not after they've already done so.

Women and profits go together. Women and games go together. Putting them together makes business sense. ❖

## FOOTNOTES

- 1 "Women More Involved in Home Electronics Purchases: New Vertis Study Identifies Purchasing Trends and Behaviors Among Home Electronics Shoppers," Vertis, 2004.
- 2 McIntyre, Paul. "Game Makers Target Women." *The Age*. Oct. 14, 2004.
- 3 "Net Games Lure 'Bored Housewives,'" *BBC News*, June 10, 2004.
- 4 *ATV: OFFROAD FURY 3 ad. GMR*, January 2005. Pages 93–94.
- 5 Schott, Gareth. "For Men: Examining Female Reactions to Nintendo's Marketing for Game Boy Advance SP."
- 6 According to the Entertainment Software Association, a blockbuster game like *GRAND THEFT AUTO: VICE CITY* can cost between \$3 million and \$5 million to develop, with an addition \$10 million for promotion and marketing.

7 Graner Ray, Sheri. *Gender Inclusive Game Design*. Hingham, Mass.: Charles River Media, 2003. Page 70.

8 Bossidy, Larry and Ram Charan. *Execution: The Discipline of Getting Things Done*. New York: Crown Publishing Group, 2002. Page 224.

9 Olsen, Jennifer. "Game Developer's 3rd Annual Salary Survey," *Game Developer*, February 2004.

10 Krotoski, Aleks. "Chicks and Joysticks: An Exploration of Women and Gaming," *ELSPA*, 2004.

11 Peters, Tom. *Re-imagine!: Business Excellence in a Disruptive Age*. London: Dorling Kindersley Publishing, 2003. Page 170.



Microsoft

**XNA™**

# Survival of the Fittest

**Power. Intelligence. Opportunity.**

**Microsoft  
Game Developer Day**

Tuesday, March 8  
10:00 AM - 6:00 PM

**Microsoft  
Hands-On Workshops**

Wednesday, March 9  
Thursday, March 10  
Friday, March 11

**Microsoft  
Sponsored Session**

PIX Demonstration  
Wednesday, March 9  
2:30 PM - 3:30 PM


**Microsoft  
Conference Session**

Advanced Real-Time  
Rendering:  
Beyond Reflectance

Microsoft  
**DIRECTX®**

**Microsoft @ GDC 2005**  
**[www.gdconf.com](http://www.gdconf.com)**

**XBOX™**



Plays well  
with others.

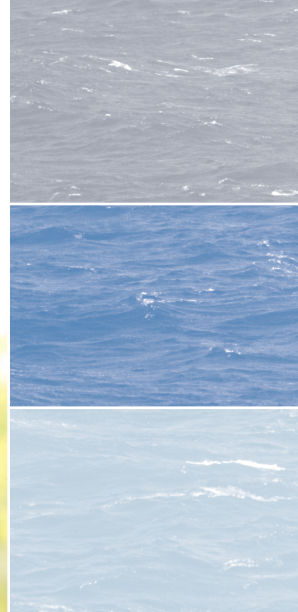
Effective game protection takes strength and sensitivity. That's why **leading developers trust Trymedia's ActiveMARK** for consumer-friendly digital distribution that works on disc and via download. Plus, ActiveMARK delivers unmatched flexibility and ease of integration.

Learn all about ActiveMARK at **GDC 2005, Booth 224**. And don't miss "Inside The Hacker Mind" and other Trymedia sponsored sessions.

[trymedia.com/gdc05](http://trymedia.com/gdc05) for info.

THE SOLUTION FOR SECURE DISTRIBUTION

 **TRYMEDIA**  
SYSTEMS



# BREAKING THE WAVES

Doug Whatley and BreakAway Games get serious

## **BREAKAWAY GAMES HAS BEEN AROUND SINCE JANUARY 1998**

as a splinter group from the defunct ABC-owned development group OT Sports. As an early pioneer in the “serious games” industry, which comprises games with non-entertainment purposes such as training and education, BreakAway is in a unique position as one of the industry leaders. Of the five AAA budgeted serious games in development, the company claims, BreakAway is responsible for three. The most visible patron of serious games is the U.S. military, but these games have multiple applications. BreakAway’s serious game, *CRATE*, an underwater diving simulator, is currently in use by both the Navy and the healthcare industry, for vastly different purposes.

Speaking to *Game Developer*, CEO Doug Whatley expresses unbridled optimism for the future of the genre and its importance for the game industry as a whole, given his company’s status in the market.

**Brandon Sheffield:** *How did you get into the serious games space?*

**Doug Whatley:** A lot of us, including myself, have a background in board games—sort of did it as a hobby over many years. And through connections with that, I knew some people that worked with the military, and they had projects where they wanted [to computerize] board games that the military was using.

So we had a couple of those projects to sort of pad the budget in the early years and got to really know working with the military—there’s a lot to that that you don’t think about, both in terms of doing the contracts, which is very difficult and time consuming, a ton of paperwork, and also just regulations, and what it takes to work with the military. As we learned that, we also started to see how really backward they were in terms of their training software, and just how much of an advantage the games business had over the military. So we started to take advantage of that and actually look for places to take the technology that we created for our games and look for ways to repurpose it and sell it to the military. BreakAway’s done for the most part PC stuff—city builders and strategy games—so a lot of that just fit really naturally with military planning and those types of projects.

**BS:** *So you basically started with serious games, in a way?*

**DW:** Right, and we didn’t really think of it as serious games, just another revenue source. But without a doubt, we always had in mind—you know the games industry really attracts the best and brightest of programmers and artists, and all of us have other interests as well, so it was very fulfilling to work on projects that were really important and had some meaning. We just sort of built on that, and about three and a half or four years ago, the company made a concerted decision that we were going to really turn ourselves into a serious games company. We hired some business development people specifically to target the government market, we began to look at other segments, like medical simulation, and areas where what we did would be of value as well, and began to sort of build on the reputation that we had built within the military. And that was just perfect timing for the wave that’s hitting now, where serious games are a hot topic. We were just well established in the genre at the right place at the right time because of that.

**BS:** *Are budgets smaller for serious games?*

**DW:** No, that’s really not true. What you’ll find is that to get the big budgets, you usually have to do a smaller budgeted prototype, because there’s almost a three-tiered funding, especially to the military, but to all of the government, where the first funding is very small, but they’ll pay you good money to do a design document and get a plan. If they like the plan then they’ll pay you a couple hundred thousand dollars to create a prototype, and then if that gets well received, then there are many millions of dollars to create the full project. What really kills most game companies is that those three phases are not contiguous. So you’ll do the design, and it may be six months before they decide that they actually want to fund the prototype. Then once you’ve done the prototype, it may be six months or a year before the big project gets funded.

Just one of them is not really a good model for a game company because they can’t afford the downtime in between. And with the government, you just never know whether

» brandon  
sheffield

---

## **BRANDON SHEFFIELD**

*is the assistant editor at Game Developer, and has degrees in cinema and Japanese language and culture. He can also beat you at KING OF FIGHTERS. E-mail him at [bsheffield@gdmag.com](mailto:bsheffield@gdmag.com).*

# BREAKING THE WAVES



**CRATE is being used to help relieve children's awareness of pain during chemotherapy.**

something will get funded or not. So one of the things we've had to do to make ourselves a stronger company in terms of serious games is grow bigger. You need a whole bunch of those projects in the pipeline, and you have to get good at scheduling and overlapping them and filling the gaps with other phases of other projects.

**BS:** *Is everything commissioned, or do you also develop concepts or demos and market them?*

**DW:** The majority of the work we have done, and I think most of the serious games stuff, is commissioned. It's sort of work-for-hire where you get to keep the IP. That's the one advantage of doing a lot of the government work: You can keep the IP.

So we've done budgets that were multi-million dollar games, and they just wanted the game—we kept ownership of all the technology and all the code. That has two really important aspects: One is that if there are commercialization chances, you can go make a game out of it on your own; you don't really have to worry about anybody else owning the IP. If you want to use it for a different governmental agency or something like that, you're free to do that as well. So there's good revenue from owning that IP, but the other thing about it is that since you own the IP, if they want to do a version 2, they have to come back to you. So it guarantees you downstream revenues if they like the project and want to keep adding new things to it.

**BS:** *As far as multi-use IP, who's using your CRATE product?*

**DW:** There are several different groups. The Navy's using it, but we're also using it in healthcare, interestingly enough. We're working with a group that's doing a study to prove that virtual reality can minimize the awareness of pain, especially in children. We're working with a group that works with a lot of kids that have leukemia or cancer and have to get chemotherapy

treatments once a week. By putting them into a virtual environment where they can do something while they're getting the treatment, which is fairly painful, they notice the pain less.

**BS:** *So how specifically is it used?*

**DW:** Well, what we do for the underwater one is we put a headset on them so they're in the virtual environment, and put on earphones so they're completely immersed, and they can swim around as a scuba diver and find things—you know, treasure and things like that. And that's the intention: to put them in different environments. Underwater is particularly attractive because it's pretty relaxing as well. It has the added benefit of not being too stress-inducing.

**BS:** *With serious games, you don't have review scores, so how do you know if you're being effective?*

**DW:** We get a lot of compliments, and I wouldn't say we've gotten any complaints—what you do get sometimes on the negative side is people that feel threatened by your product. If there are trainers out there that

see that your game is training people better than their training class does, they sometimes aren't happy about that. [Laughs.] But there's really not a lot of hard-core validation of how well the training from a game works. Everyone is very confident that it works, and we're all really rushing right now, along with academics, to prove just how much it works. We're looking forward to the day when we have a lot of really detailed studies that show 30 percent increases in efficiency and those types of things. But right now we're still in a place where the companies that hire us kind of have to take a leap of faith, and we're aware of that because that can't last forever—we have to do a good job, and once we deliver it, we have to be very willing to stick with them and work on it. The game may work but it may need some fine tuning to really make it work, and right now we're only interested in hitting home runs. It doesn't do us any good to just do an okay product.

**BS:** *Would you say that this is a good market for independent game developers to get into?*

**DW:** I definitely think that's true. I think [there's] a misconception about there being only small projects. There really are a lot of large projects, but the other advantage is that there is a really big range of projects—there are a lot of small projects out there too. And that allows a lot of people to get into the business. I mean part of the problem with the games business right now is that the game contracts have gotten so huge that it's very difficult for a small group to break in, because you just don't find publishers giving million dollar contracts to do small games. It just isn't done. But that is done in serious games. And you can find a ten thousand dollar contract up to a 20 million dollar contract. It allows you to both get into the business and scale your business to what you're comfortable with. Some people just like working with small teams, and it's a great business for that. ❄️



## Get your games dressed for success.

If you have great ideas – and the ambition and coding capabilities to match – Sony Ericsson Developer World is here to support you with everything you'll need to get on the fast track from mind to market. From the best tools and responsive tech support to exciting go-to-market opportunities and the coolest line of Java MIDP 2.0 and 3D phones.

In March, you'll find us at booth number 130 at the Game Developers Conference (GDC) 2005 in San Francisco where Sony Ericsson is Platinum Sponsor of GDC Mobile. You'll also be able to learn more about mobile game development with Java 3D at a sponsored seminar session on March 11th.

Go to [www.SonyEricsson.com/developer](http://www.SonyEricsson.com/developer) or visit us at GDC 2005 to find out how to dress your games for success.



Sony Ericsson

[www.SonyEricsson.com/developer](http://www.SonyEricsson.com/developer)

~~POSTMORTEM~~  
POSTMORTEM

# UP YOUR ARSENAL: RATCHET

» AT THE END OF 2003, INSOMNIAC GAMES was facing the biggest challenge in its history. We had just completed an exhausting project, RATCHET & CLANK: GOING COMMANDO, and we were attempting to create a bigger and better game in a single year, which was also to be our very first online-enabled game. The stakes were incredibly high. Every sequel Insomniac had ever done had been superior to its predecessor and received higher critical acclaim. But GOING COMMANDO had been the best-reviewed title in our 10 years as a company, so finding a way to top it really seemed like an insurmountable task. We knew we were taking on the most ambitious project we had ever attempted, and we began to think we had bitten off a little too much this time around.

**BRIAN HASTINGS** is chief creative officer and a partner at Insomniac Games. He is Insomniac's third employee, dating back to 1994 when the team was squashed into a tiny office to make their first game. Brian is responsible for overseeing creative direction on current and future projects. Send comments about this article to [editors@gdmag.com](mailto:editors@gdmag.com).



# ON AND OFFLINE IN & CLANK

## GAME DATA



**PUBLISHER:**  
Sony

**PLATFORM:**  
PlayStation 2

**NUMBER OF DEVELOPERS:**  
65 (plus 2 contractors)

**DEVELOPMENT TIME:**  
18 months: May 2003 (pre-production) through November 2004 (ship date)

**SIZE OF THE PROJECT:**  
2 million useful lines of code

**NOTABLE TECHNOLOGIES:**  
Maya for 3D assets, animation, level layouts, and gameplay placement; Photoshop and DeepPaint for 2D artwork; Proprietary system for asset management; Perforce for source code control; and SCE-RT network libraries for online functionality

In **UP YOUR ARSENAL**, weapons can now be upgraded seven times.

Fast-forward one year and **RATCHET & CLANK: UP YOUR ARSENAL** has shipped one week ahead of schedule and earned higher critical acclaim than its predecessor. From the outside, it may appear that everything went off without a hitch, but that is far from the truth. In the end, **UP YOUR ARSENAL** succeeded because several important things went better than expected, and, more importantly, because the things that went wrong were systematically solved by some very determined and dedicated people.



## WHAT WENT RIGHT

**1 STORY INTEGRATION.** On all our previous games, except **DISRUPTOR**, animators and programmers handled almost all the writing. But because these people had other full-time responsibilities, the writing duties sometimes had to be rushed a bit. As the company grew, we knew we needed to find a long-term solution for handling the writing workload.

For **UP YOUR ARSENAL**, we hired a full-time writer, Brad Santos. One of our top goals for the game was to make the story more integrated with the gameplay than in our previous games. We had been working on a rough plot outline based on a handful of concepts like “Secret Agent Clank,” “The Q-Force,” and a plot to turn all organic life into robots. Our writer worked with the whole team to turn our mix of creative ideas into a cohesive and compelling

storyline. The writer eventually came up with the *Starship Phoenix*, the star-cruiser that Ratchet visits throughout the game, which proved to be a grounding point for the story as well as a place to develop our supporting cast in real time. He then developed a great series of mini-plots that ran in the background of the main story arc and kept the player eager to see the next scene. From the 1940s-style galactic soap opera, to the back-story of the game’s villain told in comic book form, to the mystery of “Evil Clank,” to the saga of *Courtney Gears*, to the cowardly antics and ultimate vindication of the *Galactic Rangers*, the many background

plots in the story added layers of depth to the classic saga of saving the galaxy from a maniacal robot-supremacist.

At the beginning of the project, we were a little worried about whether an outsider would be able to preserve the quirky, signature humor that Insomniac had been known for. Those fears were quickly laid to rest, and the final script is, in my opinion, the funniest one so far in the series.

**2 FULL-FLEDGED INTERNAL TESTING DEPARTMENT.** One of the biggest success stories of the project was the revamped testing department. We ramped up from five full-time internal testers on **GOING COMMANDO** to 16 on **UP YOUR ARSENAL**. This enhancement ended up being a life-saver, because testing our online content required eight full-time testers all by itself.



The testing department also bore the brunt of the disc-burning process. More than 1,700 discs were burned over the course of the project. We had more deadlines that required discs than ever before. We conducted nine play-tests over the project, three localized demo-discs, an online E3 disc, three online public betas, and finally alpha, beta, and gold all localized for seven languages. Any number of simple things can go wrong with each disc that would render it a useless coaster, so it was critical that we got instantaneous feedback from testers the moment a disc was finished. Without the improved organization and increased staffing of our testing department, we would certainly have missed our ship date.

**3 VID-COMICS.** Vid-comics are a hybrid of comic books and classic 2D side-scrolling games. Vid-comics were actually a concept we had considered for a stand-alone product a couple years back, but we were way too busy with Ratchet to start a second team. Plus, even really good 2D games just don’t seem to sell very well anymore. But that provided a great opportunity: What if we introduced Vid-comics starring Captain Qwark as part of the Ratchet franchise?

The designers and programmers did an amazing job capturing all the fast-paced, addictive action that made the old-school games so much fun to pick up and play. Our writer then crafted a hilarious storyline for each level that detailed the secret history between Captain Qwark and the villain, Dr. Nefarious. Finally, the character-art team created some incredibly lush and vivid comic book-style art that really brought the whole thing together. The Vid-comics ended up being one of the coolest, most unique elements of the game, which also showcased the creativity of many different team members.

**4 ZERO TO ONLINE IN 13 MONTHS.** It turns out that online gameplay is very hard to do—very, very hard to do. When a team transitions to developing online games, they must go through an arduous learning curve. You learn valuable lessons: Nothing is ever deterministic with testing. Simple state machines are never, ever simple when they must be synced across the Internet. And you find that many more things can go wrong than you ever imagined possible.

Despite this, we ultimately managed to go from no online code at all to shipping an online title in 13 months. We had a relatively small core online team consisting of one designer and four programmers, but their dedication and vision took the online mode to a much higher level than any of us could have

CONTINUED ON PG 32



# 3D

# scanning...

## ...for Complex Objects



### **DESKTOP 3D SCANNER**

High resolution, compact:  
Sculptures  
Models  
Bones



### **HIREZ MINI MODEL SHOP COLOR 3D SCANNER**

High resolution, mid-size models:  
Design  
Prototypes  
Reverse  
Engineering



### **MODEL SHOP COLOR 3D SCANNER**

Standard resolution, large models:  
Large sculpture  
Maquettes  
Industrial Models

## ...for Human Subjects



### **HEAD AND FACE COLOR 3D SCANNER**

Standard resolution, composite human face or head:  
Animation  
Engineering  
Design  
Virtual Reality



### **WHOLE BODY SCANNERS (WB4 & WBX)**

Full resolution, whole body scanning:  
Animation  
Fashion  
Ergonomics

**Whatever You're Scanning,  
Cyberware provides an entire line  
of 3D scanners that are fast,  
accurate, and easy to use.**

CELEBRATING 20 YEARS OF 3D SCANNING!

# Cyberware®

[www.cyberware.com](http://www.cyberware.com)

email: [info@cyberware.com](mailto:info@cyberware.com)

CONTINUED FROM PG 30

anticipated. There were so many technical hurdles and design challenges in the early stages that it took us all by surprise when our first public play-test suddenly got rave reviews. That was a major psychological boost for us, knowing that only three months into production we had the kernel of a really addictive online mode.

Our internal testing team was also indispensable. Having constant testing support for the online features from the beginning of the project probably halved our development time. Finding and reproducing bugs online is extremely time consuming, and if our programmers had had to do it all themselves, we would never have shipped on time.

**5 GAMEPLAY TWEAKS, LARGE AND SMALL.** There were many new gameplay tweaks and innovations, some big and some small, that worked out surprisingly well. The new Battlefield missions are probably my favorite. These are objective-based missions against hordes of enemies that simulate the flavor of the online gameplay. The voice-over dialog of the robot troopers who fought with you really made the experience come alive.

Another cool addition was the introduction of two new types of crates: inferno and jackpot. One gives you super-armor and two flaming wrenches, and the other multiplies your bolts and experience. They are subtle additions, but they really make breaking crates feel fresh again.

The biggest tweak in terms of enemy combat was the seven levels of upgrades for all 20 weapons. This made the battles extremely addictive because you're always looking forward to one more weapons upgrade.

Another subtle but important tweak was the addition of new control modes, including a first-person mode and a third-person/first-person hybrid. These modes let the users play in a brand new way and greatly enhanced the shooter gameplay.

The last small but important tweak worth noting is the "vendor" redesign that lets you restock ammo with a single button press. It's a tiny element in the grand scheme of things, but it improves



the flow and keeps the player in the action as much as possible.

Many of these tweaks and additions seem minor on their own, but I think the combined effect of all these improvements makes UP YOUR ARSENAL the most addictive title in the series.

## WHAT WENT WRONG

**1 BEGAN ONLINE LOBBY TOO LATE.** The online lobby is the single most critical factor in how much players play an online game. A fun online game with no ability to join your friends will never develop an audience. We knew this going in, and we even had an ambitious plan for the lobby fairly early on. But we failed to make sufficient progress with it for too long. There were so many other programming needs involved with just developing the gameplay content that the lobby kept getting pushed back.

Eventually, we realized there was no longer any way for us to complete it in-house. We struck a last-minute deal with BuzzMonkey, a company that managed to deliver the core engine for the lobby in about 60 days. (That might be a record, if anyone is counting.) The outsourcing ultimately saved us, but we still needed six of our programmers to work on various aspects of the lobby over the final two months and to polish the user interface, get stats and rankings all working, and finalize all other features. The bottom line is that making a really good online lobby is an incredibly big task. We now have a much better idea of how much time and effort is required, and we'll be prepared for it for our future online products.

**2 JUNE, THE MONTH OF HELL.** When we first created the top-level schedule for the project, we knew that June would be an extremely busy month. We had promised Sony we would deliver three localized demo disks that month, and we also had scheduled both an internal and external focus test that required discs. Our mistake was in expecting to do our online beta discs in July.

Midway through the project we realized that by the time the online beta discs were distributed and the beta testing was completed, it would be just a couple weeks before our gold date and we wouldn't have a chance to tune the game based on the results. So we pushed the online beta disc deadlines (one version each for the U.S., Europe, and Korea) to June.

To make it more complicated, two of the three demo disks required both bootstrap and standalone versions because they would be used in different ways. The total number of discs due in June was 10—four of them required language localization and eight would be released to the public. Finally, in addition to all the disc deadlines, we had also committed to delivering all our localization assets for translation in June. So all scripts, in-game dialog, message text, lobby messages, and menu text had to be final and shipped by the end of June. The month of June went from being a fairly hectic month on paper to being the



The implementation of new storytelling devices, such as Vid-comics, were made easier by hiring a full-time writer.

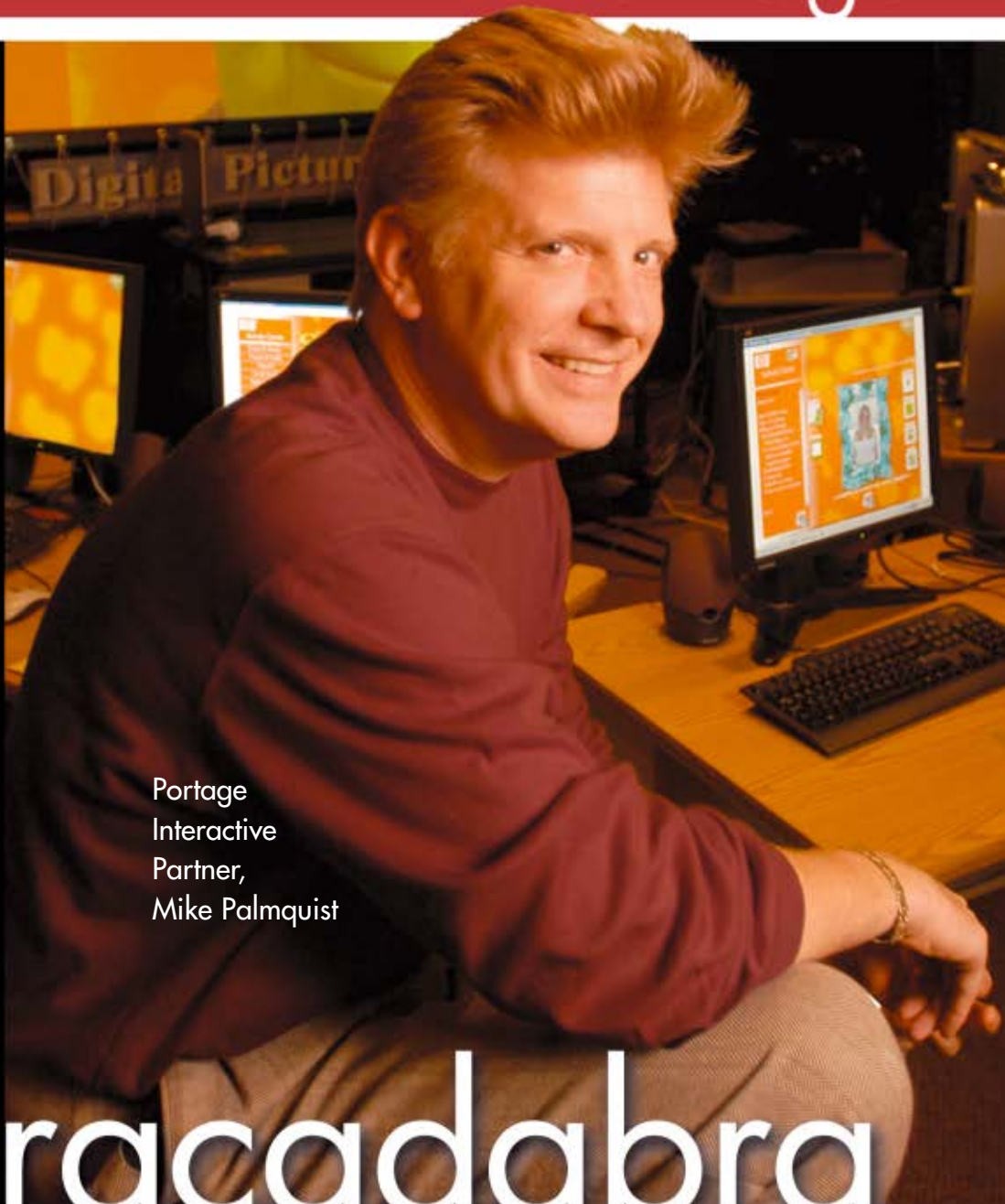


CONTINUED ON PG 41

# The Small Business Advantage

## Inside:

- > **Infrastructure without the hassles**
- > **PCs: Building vs. buying**
- > **Making the most of the new service options**
- > **HP's Smart Support program 'charms' small businesses**



Portage  
Interactive  
Partner,  
Mike Palmquist

# Abracadabra

System magic for game developers

# No Hocus

## Just affordable technology and flexible service options that can work

**L**ike their larger competitors, small and medium businesses demand a lot from information technology, counting on it to improve customer relationships, boost productivity and provide intelligence for smarter decisions. But unlike the big guys, smaller firms have smaller, less-specialized IT staffs—if they have one at all. This puts a premium on reliable, cost-effective solutions that are extremely easy to own and support.

“Whether SMBs buy direct from the manufacturer or from a local reseller, the best deal is one where they can get support and services together with the product,” says Laurie McCabe, vice president at research firm AMI Partners in New York. “Unless you have outside support, it’s a drain on the business every time a problem comes up.”

Romi Randhawa, president and CEO of HPM Networks, a reseller in Fremont, Calif., agrees. “SMBs don’t want to hire systems engineers and other technology experts,” he says. “They’re far better off with a local partner that can sell and support a wide range of technology.” To meet this need, HPM delivers a broad portfolio of products and technical services from HP, including system design and procurement, installation, maintenance, repairs and software support.

In addition to supporting its own customers, HPM provides support to local customers who purchase HP products directly from the vendor. HP’s global services team is also available to support small and medium business customers with branch offices and mobile users around the world.

### Systems Plus Service

At San Diego-based law firm Procopio, Hargreaves, Cory & Savitch, cost-effective technology begins with products that incorporate the latest innovations and are easy to support.

“Ease of ownership comes from investing in the very best equipment and staying current with it,” says Mark Olsen, director of technology. “Current technology can deliver significant benefits in per-

**“For us, ease of ownership means service, support and price. HP has helped us accomplish our goals without compromising quality.”**

— Dennis McCarthy, Director of Information Technology, Cummings & Lockwood

formance and security.” To provide continuous access to business applications for Procopio’s 170 lawyers and staff from both the office and the field, the firm relies on HP technology.

But Olsen believes that selecting the right product set is only half the equation. The other half is establishing the right relationships for service and support. “Outside service providers directly complement our staff,” he says. Procopio receives procurement, maintenance

## Hassle-Free Computing

### HP makes it easier for SMBs to own and manage technology

*New waves of technology are transforming business, and SMBs can’t afford to sit on the sidelines. But with limited resources, small and medium businesses also need to control their costs and see real returns from their IT investments.*

*Recognizing this, Hewlett-Packard continues to develop new service and support options that lower the entry bar and improve ROI for smaller businesses. The following are the most frequently asked questions about these programs.*

**Q** Why is information technology that’s easy to own so important to small and medium businesses?

**A:** Small and medium businesses have many of the same information technology requirements as large enterprises. The difference is that big companies have fully staffed IT organizations. Because IT departments are limited or nonexistent at many SMBs, they need additional support for identifying which technologies to invest in and for help with implementation and maintenance. Ownership concerns span the entire process—from the acquisition of technology to integration, service and ongoing support. Ease of ownership frees SMBs to

focus on their business and not waste time and resources dealing with their support tools.

**Q** What steps has HP taken to tailor its technology to meet the special needs of smaller companies?

**A:** HP works to make the ownership experience as easy as possible in terms of purchase, installation and ongoing support. We do a substantial amount of research with our smaller customers to ensure HP products and solutions meet their needs. HP also provides a variety of free support tools for small and medium businesses, including education and resource Web sites that are continuously updated.

# Pocus Here

## wonders on the bottom line

and engineering support from LANSolutions, a local HP partner, and contracts directly with HP for fast-response, 24 x 7 service for its business-critical servers.

### Multifaceted Support

Likewise, comprehensive, flexible third-party support helps Cummings & Lockwood LLC, a Connecticut-based law firm, achieve its technology objectives. The company chose to source its servers, workstations and networked storage directly from HP, while arranging for technical assistance from several local firms chosen from a list of local partners provided by HP.

After reviewing various service provider proposals, Cummings & Lockwood settled on Comport Consulting Corp. for its storage area networking expertise; Aegis Information Systems for its Microsoft and Citrix expertise, and Connecticut Computer Services for its training and PC imaging expertise. "We are very happy with the choices HP provided and the services we've received from these firms," says Dennis McCarthy, the law firm's director of information technology.

McCarthy also relies on HP for financial services, choosing to lease the firm's computer equipment rather than buy. "We like leasing because it helps us plan our technology refresh cycle," he says. "For us, ease of ownership means service, support and price," says McCarthy. "HP has helped us accomplish our goals without compromising quality." ■



Procopio, Hargreaves, Cory & Savitch's Mark Olsen looks outside the law firm for service and support.

### **Q** How does HP help small and medium companies make the right technology choices?

**A:** HP understands that small and medium-size firms often look to local business partners with the expertise to help them with technology issues. HP is making significant investments to provide partners with the assets and the capabilities they need to successfully support their SMB accounts. For SMB customers that want to research technology on their own, HP has invested heavily in Web resources, including information on vertical industry solutions, solution sizing and assessment tools, live chat with HP advisors and free online training. SMBs find this information so useful that the support page (located at <http://www.hp.com/sbso/index.html>) is the

second most visited page on HP's Web site, following the home page.

### **Q** What specific options does HP offer for product support?

**A:** HP offers Smart Support services that are designed to provide expert support, easier management and flexible financing options for small and medium business. HP Smart Support addresses potential issues before they affect business operations and provides access to the appropriate resources to resolve any issues that do occur. Offerings include the following:

- **HP eSupport** offers customers comprehensive Web-based research, purchase and support capabilities for a variety of products. Options include searching multivendor knowl-

edge databases, using automated diagnostics and receiving automated notifications of potential problems.

- **The HP PartnerONE Unified Support Network** provides access to local experts with proven experience in helping SMBs choose and implement technology solutions. To deliver support at the local level, the Network combines HP expertise, advanced parts logistics and service delivery capabilities with local partner expertise and services.

- **HP Care Pack Services** are available directly from HP or from local solution providers. Offerings include diagnostic services, enhanced HP product warranties, and software support for HP and select third-party software. ■


HP recommends Microsoft® Windows® XP Professional.



① More productivity each day using advice from HP experts

② More work done each week using reliable HP PCs with Hyper-Threading Technology



ADVICE	+	TECHNOLOGY	+	SUPPORT	
HP experts work with you online or in-person to develop solutions that make your business more productive.		Get more done with HP technology, including the multitasking HP Compaq dc5000 powered by Intel® Pentium® 4 Processor with HT Technology.		The 24/7 HP Training and Support Center has over 1,600 interactive guides to help your people work smart and fast instead of long and hard.	

Screen is simulated. Performance may vary depending on the system configuration and software applications used. Intel, Intel Inside, the Intel Inside Logo and Pentium are trademarks and Windows are registered trademarks of Microsoft Corporation in the United States and/or other countries. © 2004 Hewlett-Packard Development Company, L.P.



3 More efficiency each month using HP online classes

4 More profit each quarter using everything you get from HP



More advice before you buy and more support after. [www.hp.com/smb/technology](http://www.hp.com/smb/technology)



program: A broad range of hardware, service and support for small and medium businesses. —



invent



or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. Microsoft



- ① **Preparation:** You talk to an HP expert about safeguarding data
- ② **Prevention:** You get the world's #1 selling server/storage solution
- ③ **Precaution:** You set up the system's one-button disaster recovery
- ④ **Protection:** Your system kills a virus, but it was in self-defense



**More advice before you buy and more support after.**  
[www.hp.com/smb/dataintegrity](http://www.hp.com/smb/dataintegrity)

ADVICE	+	TECHNOLOGY	+	SUPPORT
<p>With 210,000 certified partners worldwide, there's one nearby to customize a safe data solution for your business.</p>	<p>For outstanding uptime, pair the dependable HP ProLiant ML350 G4 server and its Intel® Xeon™ Processor with the HP StorageWorks DAT 72 tape drive.</p>	<p>One-button disaster recovery brings everything back in one step. HP Care Packs can provide higher levels of uptime and support services.</p>		

HP's Smart Office program: A broad range of hardware, service and support for small and medium businesses.



# Builder's Choice

## Buying PCs from HP computes for Portage Interactive

**A**mong game and educational software developers, there's a common belief that it makes sense to build your own computer systems. After all, developers are technical experts, and building personal computers is well within their reach. Yet the question remains: Is building your own PC systems good business? Or does buying your systems make more sense?

Mike Palmquist is a partner in Portage Interactive, a development studio in Minneapolis that specializes in educational game software for children. Perhaps best known for the award-winning Focus Reading application, Portage's six-person staff has considerable technical expertise—enough to manage a range of systems for development and testing, a local area network, a Web site and four printers. But when it comes to the studio's computer systems, Palmquist is a buyer, not a builder.

### The Benefits of Buying

"A lot of the today's machines have many of the same parts, so there isn't much benefit when you build," Palmquist says. At times Portage's technicians do customize systems with additional RAM or video cards, but they've found that powerful systems are available off the shelf for relatively little. "Given today's prices, we don't gain much from building boxes from scratch," Palmquist says. "It's just not a good use of our time."

Portage also gains market intelligence by buying name-brand systems. Says Palmquist: "We always need some machines that closely represent the end user's experience. These are the kinds of systems being used in homes and schools, and our developers need to understand their typical functionality and response times."

So what criteria does Portage use when purchasing computers off the shelf? Affordable price, strong performances, reasonable warranties and support that is there when you need it—all provided by HP, the workstation brand that Portage prefers. The firm has several HP workstations that have proven themselves reliable. So reliable, in fact, that Portage has never had to call HP for warranty support or service.

"Our HP systems have stood up well over time," Palmquist says. "We really have had a positive ownership experience."

### HP Printers Ideal for the Small Office

Like many development studios, Portage has long experience with HP printers. Currently, Portage has four of them, including a multi-function unit it uses for faxing, printing, scanning and copying.

"In terms of value, the printers are ideal for the small office," Palmquist says. He also appreciates the functionality of the HP desktop-printer combination for the typical user who, increasingly, is involved with digital photography. "We are always looking for equipment that facilitates the integration of digital photography with



**"Our HP systems have stood up well over time. We really have had a positive ownership experience."**

— Mike Palmquist, Partner, Portage Interactive

computers," he explains. "This is a strong suit for HP workstations and printers."

Working with HP has given Palmquist added confidence in the manufacturer. "In the next six months, we'll probably be buying a couple more workstations," he says. "Our first thought will be to look at models from HP." ■



HP recommends Microsoft® Windows® XP Professional.



1 HP experts offer advice about mobility solutions for your office

2 Award-winning HP wireless notebooks delivered to your office

3 Tech support available miles from your office

4 Wherever you are becomes your office



More advice before you buy and more support after.

[www.hp.com/smb/wireless](http://www.hp.com/smb/wireless)

ADVICE	+	TECHNOLOGY	+	SUPPORT		
With 210,000 certified partners worldwide, there's one nearby to help you develop a complete wireless solution.		The HP Compaq nx5000, powered by Intel® Centrino™ Mobile Technology, was named <i>CNET</i> Editors' Choice in May 2004.		Tech support available in 140 countries means your people never have to travel alone.		

HP's Smart Office program: A broad range of hardware, service and support for small and medium businesses.

Performance may vary depending on the system configuration and software applications used. Intel, Intel Inside, the Intel Inside Logo, Intel Centrino and the Intel Centrino Logo are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. Microsoft and Windows are registered trademarks of Microsoft Corporation in the United States and/or other countries. Availability of public wireless access points limited. Wireless Internet use requires separately purchased Internet service contract. Power: six-cell standard Lithium Ion Battery provides up to four hours of battery life; optional, separately purchased eight-cell high-capacity battery provides up to five hours of additional battery life. Get up to nine hours of battery life with optional MultiBay battery. © 2004 Hewlett-Packard Development Company, L.P.

CONTINUED FROM PG 32

most intense month in the entire project. By comparison, the heavy deadline pressures of beta and gold were relatively mild.

We now carefully plan and space out all deadlines for discs that are going to the public. These discs always have a high standard for quality and require much effort and testing to make them bug-free. There's no way to completely avoid that post-E3 crunch period, but by reducing the number of public discs due in any given month, we can make the process a bit smoother. We've also been continually improving our localization process so that localized assets can "drop in" more seamlessly, and the turnaround time for discs going to Europe and Japan is reduced to only a few extra days.

**3 TOO MANY CINEMATICS.** Our initial budget for the cinematics schedule included 70 minutes of animated movies. This was about on par with *GOING COMMANDO*, though maybe more ambitious by five minutes or so. As we wrote the scripts, we used a metric based on the number of script pages to determine the expected number of minutes of animation.

What went wrong is that we were squeezing more dialog and action into a single page than we had in the past, and we were filling up whole pages more often than not. In *GOING COMMANDO*, we had many scenes that occupied just a third or half a page—but we still counted them as one page when setting up our metric for *UP YOUR ARSENAL*. The result was that we were using a metric of around 40 seconds of animation per page, when the reality was closer to a minute. Another problem was that we did not accurately budget the Vid-comic animation time. Due to the demands on the character art department early in the schedule, we were planning to create the comic book scenes for the Vid-comics fairly late in the project. Consequently, we also postponed writing them until fairly late, since we knew we had time to spare. The problem was that they ended up being almost twice as long as we had originally thought they would be, weighing in at close to 15 minutes in all.

In the end, we had 100 minutes of cinematics rather than the 70 minutes we had estimated. As a result, the animation team went into a bit of a crunch mode for the last three months of the project. Ultimately, they did an amazing job and produced the most entertaining storyline we've ever done. We've learned a lot from that experience, and we now budget our cinematics from the beginning to get an earlier start on the writing and recording so that the animation team doesn't run into crunch mode in the final months.

**4 SLOWER START THAN SCHEDULED.** Since we were implementing several types of gameplay we had never done before in *RATCHET & CLANK: UP YOUR ARSENAL*, it was impossible for us to completely and accurately schedule the whole project. Moving the online beta discs up by a month and under-forecasting the cinematics schedule were two of the big issues, but it also took us slightly longer to ramp up to full speed during the production schedule.

In the first few months of the project, we started to slip behind schedule a little bit. We brought a lot of talented new people onboard to help with the project, but we had not allocated sufficient time to train them, which forced them to jump into the production schedule and start meeting regular level milestones with little or no training. The lack of a formal training program and the lack of clear definitions of what was expected at each milestone contributed to us falling behind schedule in the earlier months. We also underestimated the complexity and time requirements of some of the new ideas in the game, including both multiplayer and the Vid-comics. In order to get



Split screen implementation required editing and updating tens of thousands of lines of game code.

back on schedule, the team found many ways to do things more efficiently, and the senior staff worked closely with the newest members to help them ramp up to speed faster.

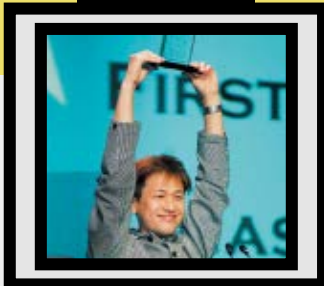
We have since begun to set up formal training programs and processes for each department. We are also planning more carefully and spending more time prototyping our new concepts to make sure we don't waste time redesigning and reprogramming in the middle of the production cycle. Finally, we are conducting weekly content reviews in which the designers give feedback on the content of the levels. This improves communication and allows us to catch problems early on and reduce rework. Perfect scheduling will never exist, but by always analyzing what went wrong with each project, we have been able to become more efficient each year.

**5 UNDER-BUDGETED ONLINE GAMEPLAY.** Our biggest issue in the entire project was underestimating the sheer scope of doing an online game. Very early on we optimistically planned to do the whole game with one online programmer. We thought if we got an eight month head start prior to production we would have all the systems in place and a single programmer would just do "wiring" and support work during production. Unfortunately we were forced to pull this programmer off of online work for a while to help us hit our gold date for *GOING COMMANDO*. If not for his help we may not have shipped *GOING COMMANDO* on schedule, but it ultimately cost us about three months of online work. We then added one more online programmer to the schedule and he began working on core systems code with about one month left before *GOING COMMANDO* went gold.

When *GOING COMMANDO* was in the can, both programmers were able to work closely together to create basic online functionality: objects syncing over the Internet, basic latency handling, handshaking, and finally Ratchet's core move-set synchronized over the Net. This last one was incredibly tough, and the online programmers deserve a lot of credit for making it look so smooth. Fast moving characters are really tricky online, but making them look good while jumping is just insane. The programmers tried many different prediction models to get it to work and they ultimately found that the best solution was to send each player's controller data over the Net, and move the remote player based on that input. This generated far smoother results for things like jumping and swinging on grapple-lines than any other prediction model. The programmers then got split-screen multiplayer functionality working around the end of



CONTINUED ON PG 43



Wednesday,  
March 9, 2005, 6:30 pm  
Moscone West Convention Center  
San Francisco, CA  
All GDC attendees are welcome.

## *You're invited to attend the* 5th Annual Game Developers Choice Awards

*"We've gotten a lot of awards for The Sims but  
THIS AWARD, voted on by the game community,  
IS EASILY THE MOST IMPORTANT IN MY MIND."  
- Will Wright, Maxis*

Transcending consumer fads, the Game Developers Choice Awards feature games and developers that are truly worthy of recognition. The recipients are chosen by those who know the games best—their creators. They honor the industry's most innovative games, and serve as a community voice for the work that developers respect most.

Join us at the 5th Annual Game Developers Choice Awards to celebrate the industry's greatest achievements.

Visit [www.igda.org/awards](http://www.igda.org/awards) to learn more.

Platinum Sponsor:



Gold Sponsor:



Presented by  International game  
developers association

# POSTMORTEM

CONTINUED FROM PG 41

January, which was a major coup since it required editing and updating tens of thousands of lines of game code.

By around February it was clear that even with things progressing incredibly quickly there was simply much, much more to do than we had accounted for. We had a major focus test coming up and we needed a lot of work on things like weapons, controls, and bot AI before we could let people play it. We added two more full-time programmers to the online team and that gave them a big lift in the final six weeks before our March focus test. We were pretty nervous about the reception before we tested it, but the online team had created a truly addictive, intense game and it was overwhelmingly popular even at the first play-test. Following that, Sony asked us to demo the game live at its E3 press conference and to show the online game on the E3 show floor. With those deadlines looming, three online public beta discs due a month later, and no work whatsoever on our lobby code, we were facing some of the scariest deadlines the company had ever had to deal with. In the months that followed, the team pulled together and found a way to do it. I think the thing that kept everyone going was that we all simply enjoyed the game so much. Every time someone would add something new and cool to the game it would inspire the rest of us to keep going and improve the parts we were working on. We also all just really enjoyed the online mode and we really wanted it to be the best online game out there.

## ARSENALS UP

For our future online games I think we'll have a better understanding of the overall scope from the beginning. If we had



known we would be doing two co-op vehicles, eight upgradeable online weapons, two online gadgets, three control modes, over a dozen game options, and 60fps frame rate with eight-way headset support, we definitely would have assigned more people to the tasks from the beginning. But even if we had accurately predicted the entire scope of the final design, we couldn't have known how much more complex it was to do these things online than it was offline.

Our team was pushed to the limits on this project, but we succeeded because of enormous determination and passion from everyone involved. The people who made this game loved what they were making, and without that we would not have succeeded. This project taught us some very important lessons about the complexity and scope of online games, and as a result we've improved our planning and pre-production techniques. But I think we're a stronger, more efficient, and more cohesive team now than we were a year ago. In 10 years I think we'll still look back at this game as one of the most challenging and rewarding projects that we ever worked on. ❖



# AAA Talent. AAA Sound.



**INTERSOUND**  
POST PRODUCTION

[www.intersound.com](http://www.intersound.com)

PH: 310.652.3741 • E-mail: [cindy\\_corson@intersound.com](mailto:cindy_corson@intersound.com)

962 North La Cienega Boulevard • Los Angeles, CA 90069-4717



SEAN BARRETT

## THE INNER PRODUCT

# LATE-BINDING DATA

### AT THE GAME TECH LEADERSHIP SEMINAR

this past December, most of the speakers stressed the importance of rapid iteration of design and art. One frequently-mentioned technique for improving iteration speed was late-binding data: not resolving references between pieces of data until run-time. Late-bound data seems to be an industry best practice; a survey of about 40 attendees at the conference found that 17 late-bind their data. Late-binding data allows for many variations and options; one way of improving iteration speed further is to support automatic reloading of data when it changes on disk, so that, for example, whenever an artist hits "save" in Photoshop, the saved file immediately appears in-game on that artist's machine.

However, the same survey found that only five attendees used this sort of automatic reloading, which I found surprising. In this column I'm going to describe the implementation of one late-bound data loading system which incorporates quite a few capabilities, including automatic loading of updated assets.

Late-binding data is a good idea whether your project is large or small. The investment is clearly worth it on a large project with many artists all working and iterating in parallel. But even for a small game it's a huge win. The games discussed at the conference, including HALO 2 and HALF-LIFE 2, typically comprise between 1 million and 1.5 million lines of code. A game I'm working on alone (see Figure 1) only has about 36,000 lines of code—around 50 times smaller. Even at that small size, though, I've found late-binding data to be well worth the investment (only a thousand lines of code, in fact). Really, everybody should be doing something like this. If you're not yet, you can even use my source code as a starting point. However, this system is so important and integral that you really need to understand it fully and take ownership of it.



**FIGURE 1** The dynamic data-loading system used in this under-development game allows programmer art created in code, like the crosshairs, to be replaced by bitmap files created by artists even while the game is running, assuming the developer ever hires any artists.

### BINDING AND NAMING

Games typically pack their run-time data assets into large "packaged" files to reduce their time to load. When compiling such a package, it's possible to resolve internal references. A level file might encode all of the textures used in the level as well. Compile-time binding would involve something like assigning each texture in the file a unique integer ID and then using this integer ID to associate the appropriate texture with each mesh in the level file. This is compile-time in the sense of *at the time the packaged file is compiled*, not *at the time the code is compiled*—although the latter is possible if you're referring to assets directly from code.

Run-time or late-binding involves storing an abstract association between each mesh and each texture. For example, the textures each have a globally unique name (not a packaged-file-specific identifier), and the meshes refer to textures by those names. At run-time (either

when the asset is loaded, or preferably, when it's used), the name is used to find the matching asset. Because the name comes from a global namespace, it is possible to use an asset that wasn't in the packaged file but is available in the global namespace through some other mechanism.

Typically, this global namespace just consists of string names; the string name of an asset is its filename (without the extension, and typically without the path). References to assets from other assets refer to them by this string name. At run-time, the data manager looks for a given named asset in the packaged file after first looking for a standalone asset in the "source art directory" (wherever assets of that type normally are looked for when building the packaged file). Ideally, the types of standalone assets supported for reading at run-time should include the file types the designers and artists work with directly, such as Photoshop PSD files,

SEAN BARRETT develops independent games in Oakland, Calif., when he's not consulting in the game industry. Reach him at [sbarrett@gdmag.com](mailto:sbarrett@gdmag.com).

or non-lightmapped level files, so that they can immediately view these assets in the game.

## PRACTICAL IMPLEMENTATION

Listing 1 shows the overall flow of how a vehicle model in my game is rendered. Note how frequently the data manager is queried to request the data. As little data as possible is stored in game data structures; instead it's all looked up on the fly. In practice, this is quite fast if the data is already loaded; the only slowdown is if the data must be loaded from the disk. Most of the data requested is derived from other data; in this case the whole process is driven by the vehicle appearance descriptor, which is described in a special text file which specifies which 3D model file to load and how to associate textures. An example is shown in Listing 2.

## Listing 1

1. On object creation, specify a string name for the vehicle type.
2. Whenever querying the object properties or rendering, request the vehicle type of that name from the data manager.
3. If not already loaded, the data manager loads the vehicle descriptor from disk and parses it into a vehicle structure.
4. When rendering, request the vehicle model of that name from the data manager.
5. If not already loaded, the data manager loads the model from disk, generates normals, pre-computed shadows, bounding box, etc.
6. Look up the "team" for this object in the vehicle's team-to-texture mapping, by giving a name.
7. Request the texture of this name from the data manager.
8. If not already loaded, look for a texture of this name on disk and load and bind to an API texture handle.
9. If no texture is found of this name, look for a bitmap of this name, load that, generate mipmaps, and bind to an API texture handle.
10. Draw the loaded model with the loaded texture.

Listing 1 shows the overall sequence of operations in loading/rendering a vehicle in the game shown in Figure 1.

There is effectively a separate namespace for each asset type, which allows for type safety and reduces the likelihood of name collisions. My data manager core, written in C, isn't typesafe; when you request an asset, you pass in a string name and a type from a type enum, and the manager returns a void\*. But I create a macro for each asset type whose only parameter is the string name, passing in the right asset type and casting the result appropriately. While this is typesafe for C, it's an obvious place to use C++ templates instead.

On a data request, the data manager takes a name string and a type and hashes the pair to look up whether it is already loaded. To accelerate look-ups, it's possible to perform this hash at load time. Instead of storing a string, you can store a Name\*, which is a pointer to an essentially internal structure which stores information about all resources of any type we've loaded with that name. At this point, finding an already loaded resource from the name requires merely an  $O(N)$  linked-list walk for all loaded resources with that name, which is typically exactly 1, and thus a fast (non-hashed)  $O(1)$  operation.

Each of my Name objects keeps three values: the string name of the object, a list of all loaded resources with that name, and a list of all on-disk resources with that name. The latter list is created at startup by scanning all the data directories, and loading all the directories stored inside packaged files. Of course, if you have a very large number of data assets, you might not actually want to keep a list of all of them in memory all the time. You can partition some of your data by level; each level is stored in a separate directory, and you dynamically "import" and "eject" these data directories from the "tracked" names information; similar techniques could apply in-memory if you're dynamically prefetching data chunked across a level. (This is the reason I don't allow pathnames to appear in the global name strings; I use paths to determine what's "available" and what's "unavailable" instead.) Other things you can do by controlling the directory scan order and skipping directories include localization for multi-language SKUs, easy data patching, and support for mods.

By deferring the loading of data until the absolute last moment, when it's actually used, and by allowing the data to come from multiple

## Listing 2

```
# model name and tweaks
al-08 yzrs 0.025
# textures
pteam al01
enemy al05 lighten:0.2
enemy2 al04
enemy3 al03 recolor:0.3,0.3,0.3
```

This file, "sledge.m3d" is a description of the appearance aspects of a vehicle as used in step 3 of Listing 1.

sources, I allow data to be loaded even if it was changed since I started the game, or even if it's coming from a file that didn't exist at the start of the game. Achieving automatic data updating at this point is straightforward. Win32 provides an API ReadDirectoryChangesW which generates a callback whenever a file in a watched directory is changed, added, or deleted. By watching all the relevant directories and interfacing this to the same code in the data manager that adds files found in the initial scan, when I see a file of a given name has changed or been added, I flush (unload) any loaded asset whose name and type is the same as that file; if the file was newly created, I also add it to my tracking list for that name. The next time that item is referenced (typically the very next frame), it will be loaded from the new location. Note that the decision to flush must be based on the file being the same data-manager type, not the same file extension; for example, if we want to override a packaged JPEG file with an actively-modified PSD file. I also provide a game-installed callback when a data item is flushed, so the game can flush any derived state manually.

## DERIVED ASSET TYPES

The above is a perfectly workable system, but I have a few more things going on. The first of these is a technique I call "derived asset types." The data manager allows you to install "loaders" which know how to turn a given chunk of data on disk into a given type. It also supports a special kind of loader, the "derived asset loader." You can specify a loader for a given type (for example, textures) and indicate that it runs if an asset of the same name but a different "source" type (like bitmaps) is found. If an asset of the source type is found, the data manager then invokes the derived loader. The derived loader then takes the source asset and transforms it



The Game Tech Leadership Seminar looked at several games, including *Oddworld Inhabitants' Stranger's Wrath*, to discuss ways to improve iteration speed.

appropriately to create a new, separate asset.

I've yet to find any uses for this other than textures, but it's perfect for that. All the various bitmap loaders are written once and only installed once; then a single texture loader can leverage all of them. In my game, if I want a hardware API texture handle, I request a texture from the data manager; if I want the actual bitmaps so I can, say, pre-process a texture on the CPU, I request a bitmap from the data manager. Each of these can be cached separately. For example, if I resize the screen, invalidating all of my texture handles, I can first call a data manager API function that uncaches all the textures. The underlying bitmap assets are separate and aren't uncached, so after the screen is resized, I can rebuild the textures without going to disk (unless the bitmaps were swapped out to make room for other things).

Of course, this could be done by simply having a bitmap type in the data manager and then wrapping a separate convert-to-texture API around it independent of the data manager. But by supporting derived asset types in the data manager, I was able to make sure changes propagate; a derived texture is flagged as having come from the same source asset as its source

bitmap, so when that asset is flushed because it changed on disk, the texture is also flushed. Also, I can have a texture-only format—for example, for compressed textures or textures with high-quality mipmaps—and I can easily replace one with the other at run-time.

Possibly there are other applications for derived asset types I haven't thought of. One could be to create a polymorphic asset type. Here's a silly example: Say you'd like to request "tree" and get back either a 3D model or a sprite, whichever existed. You could create a new polymorphic type representing "model or sprite" and two derived loaders, one which loads a model and turns it into `ModelOrSprite`, and one which loads a sprite and turns it into `ModelOrSprite`.

### A FEW ISSUES

Some of the artwork in my game is created procedurally but still goes through this same interface. For example, the HUD elements, like the crosshairs, are built by code, allowing them to scale nicely with resolution changes. Rather than go through a separate interface, they are still accessed as named textures. This means they're automatically unloaded on resolution changes,

and if I decide I'd prefer to use non-procedural textures, I can simply drop appropriately-named images into the texture directory. This is simply implemented using a special fallback loader that does string compares on the actual name.

Although this won't be useful in most game pipelines, I even have some tricks where I have special procedural loaders that parse parameters out of the name and use them to drive the result. In some cases, they'll simply load an underlying resource (parsed from the name) and apply certain filterings to it, like adjust the hue of an image or the volume of a sound-effect.

Of course, having those string names around is great for late-binding, but bad for memory usage. Thus it might seem problematic for console development. Yet, the two console games presented at Game Tech (*HALO 2* and *STRANGER'S WRATH*) not only used late-bound data, but also supported automatic reloading of data saved by artists using an application on the host desktop running `ReadDirectoryChangesW` and transferring appropriate data to the console.

There are a couple of possibilities to reduce memory usage for strings. One technique would be to use a global string table for storing all strings; thus no string is stored twice (and string comparisons are just a pointer compare). For *STRANGER'S WRATH*, *Oddworld Inhabitants* simply stores the 32-bit CRC32 checksum of each string in the final data, instead of the actual string. The desktop environment tracks the strings and watches for collisions; the shipping game has only one pair of CRC32 collisions, and the colliding names referred to assets of different types so no renaming was necessary. There's a trade-off, though: It makes debugging asset requests a little more indirect, and it's no longer possible to parse the name to do the tricks I discussed before.

As I've described it here, the system is doing what Charles Bloom calls JTL rather than JIT resource loading: "just too late" instead of "just in time." This is really an orthogonal issue that can be addressed in several ways: the game can request assets before they're needed (with the data system loading asynchronously), or a separate system can be used to load assets before they're needed, and the name-based system can be limited to looking only at already-loaded assets.

I could say more about late-binding data, but I've already delayed my articles on pathfinding by a month, so this will have to do. Should you want to use my code, learn how I approached the problem, examine my strange image processing pipeline, or mock my coding style, you can download my data manager source code from [gdmg.com](http://gdmg.com). ❖



# Death, destruction and universal domination. And that's just how EVE-Online attacks the awards circuit.

*Awards*  
TO DATE

PC Gamer Sweden  
Best Online RPG 2003

\*

SuperPlay  
GULDPIXELN 2003  
Online Game  
of the Year

\*

2003 Gamespy  
Best Graphics

\*

Game Revolution  
2003 Editor's Choice  
Awards

\*

IGN 2003  
Outstanding  
Tech Achievement  
in Graphics



© A.M.P.A.S.®

**It's nice to be recognized.** We know because the Academy of Motion Picture Arts and Sciences® was nice enough to recognize our Maya® software with an Oscar® for Scientific and Technical Achievement. So we would like to recognize the unsung success of the massive multiplayer online role playing game – *EVE-Online* and its impressive list of awards. Congratulations. We are honored that the team at CCP in Reykjavik chose to bring their vision to life using Maya, and that we played a role in helping such leading edge imagination and creativity come into being. Visit [www.alias.com/awards](http://www.alias.com/awards) to view and learn more about *EVE-Online* and other examples of award winning creativity Made in Maya.



CAN YOU IMAGINE®

## **Maya Tutorial at 2005 Game Developers Conference Closing the Gap: Bringing the Authoring and On-target Realms Together**

Closing the gap between the authoring and on-target environments is key for building better games. This tutorial will explore several approaches, including middleware such as HumanIK®. For details, and to register go to [www.gdconf.com](http://www.gdconf.com) and follow the links to the Programming track registration. **Visit us at GDC booth 230.**

 **Alias**  
[www.alias.com](http://www.alias.com)

© Copyright 2004 Alias Systems Corp. All rights reserved. Alias, Can You Imagine, Maya and the swirl logo are registered trademarks and the Maya logo is a trademark of Alias Systems Corp. in the United States and/or other countries. HumanIK is a registered trademark of Systèmes Alias Québec Inc. in the United States and/or other countries. Alias was awarded an Oscar by the Academy of Motion Picture Arts and Sciences (Scientific and Technical Achievement) for the development of Maya software on March 1, 2003 for the awards year of 2002. Academy of Motion Picture Arts and Sciences, A.M.P.A.S., the Oscar statuette and Oscar are registered trademarks of the Academy of Motion Picture Arts and Sciences. All other trademarks, service marks, or product names mentioned herein are the property of their respective owners. EVE-Online © CCP 2004, all rights reserved.



STEVE THEODORE

## PIXEL PUSHER

# SCRIPT CALL!

**IT'S FEBRUARY, THE MONTH OF LONGING** and desire. So let's confront the passion that burns in the heart of every game artist. Don't fight! Succumb to your desire! You know you want it. You want ... an intern. "Jeeves, rename all of these .tiff files to .tif files! And after you're done, fix me a mint julep."

Pawning off your scut-work is a grand old artistic tradition. If you wanted to work in Michaelangelo's studio, you'd spend years grinding ochre, whipping eggs to make gesso, or sawing boards to build picture frames before you ever touched a brush. Modern inventions like pre-mixed paint have rather diminished the role of indentured servants in painting, but in the games business we're still pretty medieval. The life of a game artist is a strange mixture of creative challenges and infuriating drudgery. How much of your work day is spent deciding how you want things to look, and how much is spent hunting for mistyped file names, double-checking the pixel dimensions of textures, or similar clerical chores? So nobody can blame you for wanting some art school kid to handle all those daily annoyances while you commune with your muse. Alas for the hard-working artist, interns are in pretty short supply. What's a poor artist to do?

Well, there is an answer, but a lot of artists aren't going to like it. You can learn scripting.

### NO, WAIT! COME BACK!

Take a couple of deep breaths. We can get through this, really.

Let's start by getting one thing straight:

scripting isn't programming. It might look the same but the resemblance is only skin deep. Scripting is merely a way to handle repetitive tasks quickly—the drudgework you want to foist onto that intern is exactly the kind of thing that scripts are good at. So don't be intimidated. Anyone with the brainpower to run a 3D app can handle scripting.

In modern graphics packages, every action you perform with a mouse or keyboard is being recorded by the program as you do it. Using the undo feature is simply stepping backwards through the list of actions you have recently done. Scripting is just a way of sending these action commands directly to the application. As far as the core of your program is concerned, there's no difference between, say, selecting a polygon box with the mouse and typing a command like "select \$box01" into the command line. The important point to remember is that scripts are really just a way to let you automatically reproduce a series of actions you could have done by hand.

For a really concrete example of this, just open your 3D package's script editor (3D Studio's MaxScript Listener or the Script Editor in Maya). Do something simple in the app—for example, create a couple of cubes and move them around. You'll see that each action you perform in the program creates a new line of text in the script window. To write a simple script, just copy those lines and paste them into the big text field at the bottom of the script editor. If you start a new scene, select all the text you pasted in and hit "Enter" on your numeric keypad. The system will replay all the actions—exactly as if you had repeated what you did by hand.

This might not seem very impressive, but in truth many scripting jobs don't involve much beyond this. If, for

example, you need to populate your levels with 36x36x36 crates, it's trivial to set up a script that creates a box, sizes it appropriately, names it "Crate" and applies a crate texture. Need a default camera? Set up a script that adjusts the positions of a camera, sets its focal length, and locks it in place. Do you always use the same lighting for previews? It's easy to create and position a suite of key and fill lights with the right colors and intensities. Anything you do by rote, or anything you do many times a day, can be a good candidate for a script. Sure, each script may only save you a few seconds each time you do it—but as you fill out your personal library of scripts, those seconds soon add up to minutes each day that you can devote to ~~websurfing~~ perfecting your artistic vision.

### CHECK, PLEASE

Of course there are potential glitches here, even in this simple example. Hitting "Return" instead of "Enter" after pasting the script lines into the editor will erase the whole script instead of running it. Script editors typically use "Enter" to mean "Do this!" so that you can write multi-line scripts; if you do hit "Return"

## scripting

### SCRIPTING IS A VERY TOUGH TOPIC

to compress down to a single column, which is why it's worth considering the books and web sites listed in the Resources (p.51). You can get a lot of mileage out of simple scripts with very little investment of energy. In an industry that produces grunt work far faster than it does games, any tool that can peel some of the gunk off your work day is worth a second look—even if it means asking a programmer to help you set up your text editor.

**STEVE THEODORE** started animating on a text-only mainframe renderer and then moved on to work on games such as *HALF-LIFE* and *COUNTER-STRIKE*. He can be reached at [stheodore@gdmag.com](mailto:stheodore@gdmag.com).

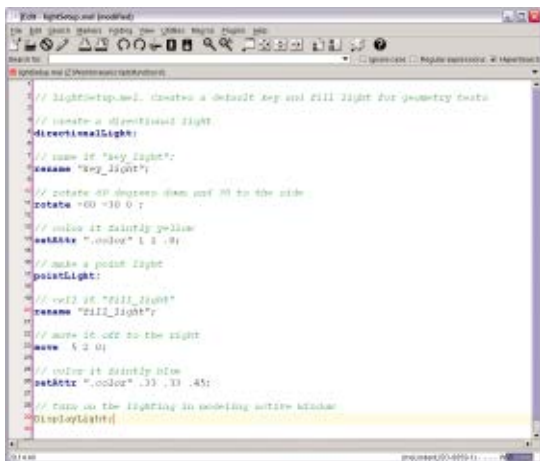


FIGURE 1. Text editors, such as jEdit, can help to clarify your scripting.

catches you. As you can see from the screenshot (see Figure 1), highlighted scripts are easier to read, and errors are easy to catch.

3D Studio's MaxScript Listener window provides a very limited form of syntax highlighting, but it's probably a

by accident you'll replace all the selected text with a single return character. Also, if you accidentally missed a few characters or lines when you did the copy-and-paste, you may receive a cryptic error message instead of the playback you expect.

Scripting languages are relentlessly, mindlessly literal. They do what you tell them to do—but only if it is spelled, phrased, and punctuated correctly. There's no doubt this is why scripting gets a bad name among artists—you might type in some lines of script from a tutorial only to find they don't work because you used single quotes in place of double quotes or forgot to capitalize something. It takes time to develop the proof-reading skills that let you spot the missing semicolons, mistyped command names, and so forth that will routinely sabotage your early efforts. This is the kind of thing that keeps many artists from trying to learn scripting.

Fortunately, there are tools to dull the pain. Programmers, who deal with this sort of nonsense every day, use enhanced "text editors" that offer the coding equivalent of a spelling and grammar check. It's not hard to find freeware configuration files that will teach these editors to work with scripting languages. With color-coded keywords and selective highlighting, a good text editor will help you catch that missing quotation mark or bracket before it

good idea to take a look at UltraEdit or EditPlus. Both programs support MaxScript highlighting and error checking, and both are shareware, so you can try them to see which suits your tastes. Maya users can work with either program as well, or with jEdit ([www.jedit.org](http://www.jedit.org)). The program is Java-based, with an unusual interface, but it's the most customizable of the lot—plus it's freeware. Programmers love to write text editors (it's what they do with the time artists spend in bars) so there are dozens more options if none of these satisfy you; ask a friendly programmer for help in finding a suitable option.

If you use Maya's scripting language, Maya Embedded Language (MEL, see Figure 2), you might also want to look into MelStudioPro, a plug-in which replaces the default Maya Script editor window altogether with proper highlighting and error checking right inside Maya. MelStudioPro is available from plug-in vendor Digimation.

## LEARNING RESOURCES

For many artists, mastering cut-and-paste scripting will be enough. It certainly can speed up a lot of routine tasks and doesn't require much thought. But once you get used to scripting the simple stuff, you may be tempted into tasks that trespass into real programming territory. You might want scripts that can handle options, so your

crate script might ask how big to make the crate instead of being hardwired at 36 units. You might want scripts that operate on a whole bunch of objects, so you could find everything in the scene named "Crate" and snap it to floor level. When your scripts start to make decisions, you'll begin to mimic "real" programming. In fact, this stuff is easier to grasp than it sounds—if all those 12-year-olds filling your inbox with viruses can master it, so can you. However, most artists will need some initial help with the basics, and unfortunately, neither 3D Studio nor Maya does a great job teaching script-writing fundamentals. The documentation in both packages assumes a fair level of comfort with programming concepts which artists may find alien. Luckily, both programs do include very comprehensive, searchable help files, which provide an easy way to look up half-remembered commands. However for actually learning how to build more advanced scripts, you'll probably want to turn to outside sources.

## MEL SCRIPTING

MEL is extremely powerful but, following classic Maya tradition, intimidating to

CONTINUED ON PG 51

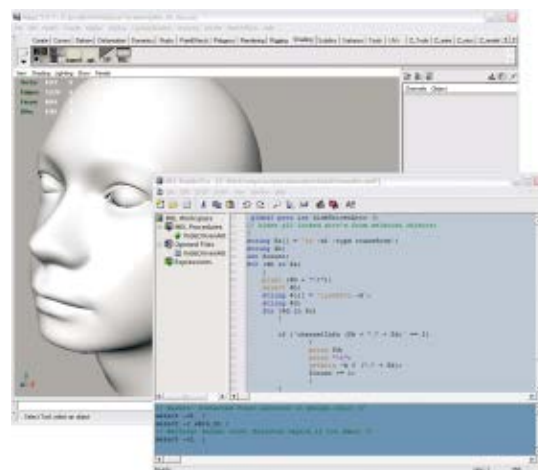


FIGURE 2. MEL Studio Pro is an alternative to Maya's official scripting language.

# F U T U R E V I S I O N

SAN  
FRANCISCO  
CA

MAR  
7-11

GDC  
>05

**Feeling a bit lost on the open road? Take control of your future today.**

Thriving in today's interactive entertainment landscape requires developers to anticipate publisher needs and consumer desires to produce polished games with extremely high production quality. At GDC 2005, you will be equipped with practical tools to handle these and other obstacles along your road, and you will be exposed to future vision catalysts—empowering you to create tomorrow's game today.

**Bring your future vision into focus at GDC 2005.**

**Register by February 9, 2005 and save up to 30%!**

**Enter to win an iPod mini**

**when you register online using the priority code: AGDMAG5**

**gdconf.com**

**GameDevelopers  
Conference**





INDEPENDENT  
GAMES FESTIVAL

Rewarding Innovation in Independent Games

# Play the Best

## Independent Games of the Year

# at the 7th Annual Independent Games Festival!

March 9-11, 2005 • Moscone West Convention Center • San Francisco, CA



**Visit the IGF Pavilion at the GDC Expo**

**Attend the IGF Awards on  
Wednesday, March 9, 6:30 pm**

**All GDC Attendees Welcome**

To learn more, visit [www.igf.com](http://www.igf.com)



Platinum Sponsor:



Gold Sponsor:

**Microsoft®**

Media Sponsors:



 [DOWNLOAD.COM](http://download.com)



PHIL COOKE

## NECESSARY EVIL

# WIRELESS NETWORKS: CARRIERS AND BARRIERS

### LEADING WIRELESS CARRIERS ARE

downloading an average of one million games every month, a figure which underlines the strength of the current mobile games space. There are a number of compelling reasons to be in the business: making Java and BREW mobile games is simpler and involves less time and money than making console or PC games; the technology that supports the games is rapidly becoming more prolific, with 42 percent of the existing devices on the market today supporting Brew and Java, which is expected to rise to 61 percent next year according to Credit Suisse First Boston, a financial services firm.

Of course, the business of publishing mobile games has its own challenges. There has been much publicity over the fragmentation of handsets. The “write once; port everywhere” dream is long down the drain. In the Western world alone, many games must be ported to more than 100 different devices, each supporting different features. Assuming you have the resources to overcome these issues—and you have applied your accumulated experience to get the best out of each device—you might assume you’re ready to sell to your eager users. Not quite.

### IN SEARCH OF STANDARDS

Between completing your now fully functional game and getting the finished product physically in the hands of your consumer stands another major challenge. Arguably, the element of mobile games publishing that holds the greatest complexity is publishing a game

to the key distribution platform: the wireless network carriers. Carriers are very obviously incredibly valuable to any mobile content provider. Your users are their subscribers, and as much as 90 percent of game downloads are carried out via their networks.

The mobile games market is still in its infancy and therefore has few established standards of practice. The manual on how to run a mobile games service has not been written. As a result, we see huge variations in the carriers’ requirements. Some operate closed shops with stringent testing prior to launch. Some have an open and trusting approach. Some manage their own downloads. Others give this responsibility to content providers. Each has different (sometimes conflicting) certification and approval procedures for any content they will offer.

As a result of these varied approaches, content providers need to be smart about how they release and deploy games. In many cases, the same game on the same handset may need to be deployed according to different standards. It’s perhaps not surprising that some of the larger mobile publishers are now acting as aggregators for smaller developers and publishers. It’s all about execution in a complex environment, so accumulated experience counts for a lot.

What lies behind this complexity is a matter of ownership of users, services, and brands. There’s a spectrum of approaches, from carriers who want to build a wall around their world, to those who act as a conduit to content provider portfolios.

We’re seeing a trend within the mobile games space to include more connected or network-aware features, ranging from simple high score reporting to genuine multi-player games. As you would imagine, this further complicates the relationship between content providers and carriers. Many of these connected features are

game-specific. There’s no consistency among carriers regarding the hosting of game downloads: Some carriers host game downloads and some don’t. However, when it comes to features like downloading extra levels into a game, it’s unanimously the content provider’s responsibility.

### US AND THEM

This development in the market fundamentally alters the relationship between carriers, content providers and users. There are no established rules for simple, single-user games, and most carriers are just beginning to understand the issues involved for network-connected games. Again, carrier involvement is critical because all these connections are over their networks.

Fundamentally, questions arise over division of responsibilities to users—“who does what” will be a subject for debate for some time to come. This applies both to the in-game connected functions, such as high score reporting, and to any related out-of-game community services too.

While we hope for industry-wide solutions to resolve these certification and demarcation issues, another outcome of this situation is the emergence of super publishers. The growing trend is for carriers to move from working with a raft of mobile publishers to a more select few. The super publishers’ expertise lies in being able to host and serve the games from their own platforms, as well as having the resources and expertise to provide games to each carrier’s exact specifications.

### CALL AHEAD

Constant and continual change is one of the only certainties in this maturing industry, as is survival of the fittest: Where a challenge exists, the winners will always find ways to turn these challenges into an opportunity. ❖

**PHIL COOKE** is CTO of Digital Bridges, which provides the distribution channels, content, brands and technology to bring mobile entertainment to a mass-market audience. He has more than 20 years of experience in software development, primarily concerning the delivery of multimedia services. You can reach him at [pcooke@gdmag.com](mailto:pcooke@gdmag.com).



ALEXANDER BRANDON

## » AURAL FIXATION

# THE LINE OF QUALITY PART 1: MIDDLEWARE

### VIDEO GAMES ARE NOT A HOBBYIST

phenomenon or a cute pastime anymore, and only a few things separate an A-list game from being as good as or better than the latest feature film. In this series, I will examine what those things are and how to cross the line of quality separating game audio from film audio, and more importantly how to take them one step further. In this column I'll look at audio middleware and engines that implement audio on multiple platforms.

### WARE'S THE BEEF?

Developing for multiple platforms used to be an option only for developers and publishers with the resources to do so. Now, a game released on only one platform has a marginal chance of becoming a hit, and a narrow margin at that. Unlike film, which is released in only one format, this is quite a barrier for game developers. Here are some questions and answers you'll probably want to consider when creating audio for a title that will be released on multiple platforms using middleware.

*Will developing audio for all platforms according to the lowest platform's spec make the highest platform sound bad?*

Easy example: The PlayStation 2, while still considered current generation, is ancient when it comes to today's audio expectations. Two megabytes of memory is feeble even with compression, and only recent advances in stretching streaming capacity as far as it will go make it competitive with the likes of the Xbox. Regardless of all this, it has the

biggest market share. So the answer in this particular case is: Most of the people playing the game won't care. If the roles were reversed, however, and the Xbox had a higher market share, how would middleware be able to help?

*How easily can audio middleware take advantage of native audio functionality?*

If you want reverb and occlusion in your Xbox title (supported in hardware) as well as in PlayStation 2, the key thing to remember is to use one tool to implement all your features, leaving feature sets as options that can be activated or deactivated. If you set up a hall reverb on the Xbox, your middleware should approximate the nearest reverb on the PlayStation 2, with each property being editable individually as well. With this functionality in place, the audio team can choose to add or subtract what they have room for at will.

*How well will middleware take advantage of game-side implementation?*

It's not so difficult to create a middleware program that will provide bank management and streaming functionality on multiple platforms. It's difficult, however, to create a middleware program that lets you implement sounds, voice and music no matter what engine you use, because middleware companies have a different mentality. I think it's time this changed. Since many tools already make use of plug-ins such as 3D Studio Max and Maya on the 3D visual art side, and Cubase SX and Pro Tools on the audio side, game tools can make use of a similar model. At the moment, audio middleware doesn't connect seamlessly to commercial game engines for several reasons. For one, game engines usually have their own audio implementations. And for a game engine to support multiple audio middleware solutions would be

costly and seen by many as redundant and unnecessary. These are okay reasons, but they're not good enough.

A game engine and an audio engine are tools, and they should link together with very little code at all. If I want to use UNREAL with Gamecoda, I should not require a programmer to spend a month minimum doing this. So what's in it for the tool manufacturers?

In my opinion, the financial answer is for manufacturers to modularize and make tools that are similar to plug-ins. For example, if UNREAL charges based on what features are chosen by the publisher or developer, and these buyers exclude audio with the intention of using middleware instead, and Gamecoda charges a certain percentage more to interface perfectly with UNREAL, the cost is balanced. Sure, you might switch engines in the middle of development, but how often does that happen? Even if you do switch engines, how much will the cost of paying an audio middleware provider for a new version be compared to a full-time programmer devoted exclusively to hooking up these systems, and the cost of putting your audio team on ice for the interim?

### STILL RARE

Consider carefully the cost of integrating audio middleware, and don't assume that it will be the right answer for a multi-platform project unless you've identified your needs and capabilities thoroughly. Audio middleware companies would do well to consider interfacing more seamlessly with major commercial engines, which could in turn potentially earn more by providing a more middleware-focused modular design. Essentially, if you can program and support your own audio engine internally, that's still the best option. But when using audio middleware, the potential is there for a lot more clean interfacing. ❖



Should this UNREAL monster be able to easily roar in any audio middleware package he likes?

ALEXANDER BRANDON has been involved with game audio since 1994 and is currently the audio manager at Midway in San Diego, Calif. You can e-mail him at [abrandon@gdmag.com](mailto:abrandon@gdmag.com).





NOAH FALSTEIN

## ❖ GAME SHUI

# QUESTION YOUR ASSUMPTIONS

### ONE OF THE BASIC PRINCIPLES

I emphasize when teaching aspiring game designers is to always question your assumptions. When it comes to deciding how to implement a specific function in a game, it's very easy to fall into a rut and do what's been done before. Often the commonly accepted method is a good one. Often, it's the commonly accepted method specifically because it's good—but that's not always the case. Sometimes the method may be a hold-over from a different format or style of game, as when early computer role-playing games all took the "three six-sided dice" convention from DUNGEONS & DRAGONS even though it wasn't really optimum for video games. Or sometimes the game function may be basically sound but overused to the point of becoming hackneyed, like "rescue the princess" as the final goal of a game, as discussed in my December 2004 column. Sometimes an accepted method may work for one type of player but not for another—rescuing a princess may appeal to a man, but may lack relevance or even evoke disdain if the player is a woman. And bridging that gap between the expectations of male and female players is the focus of this month's column.

### BREAKING OUT

Female designers and managers have been working in the game industry as long as it has existed, but they have always been in the minority and also have had to struggle with the chicken-and-egg problem of the game-buying public being heavily male too, making it hard for them to break out of existing patterns. So what play styles and

design decisions have the predominately male community of game designers been propagating that do not work for women? Some interesting answers can be found in Sheri Graner Ray's book, *Gender Inclusive Game Design: Expanding the Market* (Charles River Media, 2003). She presents an interesting overview of the history of games from a female-oriented perspective and identifies many key issues. The book provides a great context for the topic and suggests some ways to make games that appeal to girls and women. Graner Ray also frequently speaks on the topic; a point she made at the Australian Game Developers Conference about play styles was particularly revealing.

She said that using the first level of a game to introduce the basic interface mechanisms and game elements, letting the player experiment and manipulate them in a safe and encouraging environment, was a typically male strategy. I have long taught that this methodology was useful, almost like giving the player a play toolbox at the entry levels of the game. My first reaction to Graner Ray's observation was consternation—I remembered discussing this with many other designers who were all of the same opinion—and then I realized they were all male as well.

She went on to suggest that although that sort of environment can work for adult women, young girls in particular appreciate having a friend (or a virtual equivalent) to lead them through the early stages of play. I realized I had observed precisely this behavior many times with my own daughter and her friends as they took a collective approach to playing even single player games.

The experience made me realize I had grown complacent and forgotten my own rule about questioning assumptions. As scientists have found for years, it's very easy to let your own biases and expectations color your observations and



**DANCE DANCE REVOLUTION** showed how taking a few simple, creative steps can open the market to girls.

conclusions. Male game designers who want to open their markets up would be well advised to open their eyes and minds and pay attention to what games girls are playing and why.

### FANCY FOOTWORK

*Gender Inclusive Game Design* also mentions a female predilection for indirect competition, as when a game allows people to try for best scores in sequence or parallel instead of in adversarial real-time conflict. That helps explain the popularity of *DANCE DANCE REVOLUTION* with female audiences—and alerted to this, I've also observed how using foot-controlled interface serves to level the playing field, since boys tend to have more experience, and thus more dexterity, with controllers and joysticks. In *DANCE DANCE REVOLUTION*, physical agility and coordination become more important, areas in which girls are often on par or better than male hardcore gamers. The game also features a "desperately simple" interface which (as I covered in the May 2003 column) is common to many diverse games that appeal to both men and women, like *TETRIS*, *MS. PAC-MAN*, and *MYST*.

A final observation about women in games is that there is a growing concentration of experienced female designers and managers in the area of games with social themes, for example, *THE SIMS* or MMOs: Lucy Bradshaw (*THE SIMS 2*), Ellen Beeman (*MATRIX ONLINE*), Patricia Pizer (*ASHERON'S CALL*, now *Disney Online*), and Denise Fulton (*Midway Studios Austin*). They are all experienced and talented women who have made significant contributions to the industry, and are sure to make their voices heard in future. And that's one assumption I'm comfortable stating with authority. ❖

**NOAH FALSTEIN** is a 24-year veteran of the game industry. His web site, [www.theinspiracy.com](http://www.theinspiracy.com), has a description of The 400 Project, the basis for these columns. Also at that site is a list of the game design rules collected so far, and tips on how to use them. You can e-mail Noah at [nfalstein@gdmag.com](mailto:nfalstein@gdmag.com).

# CAN YOU SEE WHAT WE SEE?

NOW HIRING PEOPLE WITH TECHNICAL AND ARTISTIC VISION.



studio australia

[rainbowstudios.com](http://rainbowstudios.com) | [relic.com](http://relic.com) | [volition-inc.com](http://volition-inc.com) | [crankypantsgames.com](http://crankypantsgames.com) | [heavy-iron.com](http://heavy-iron.com) | [concretgames.com](http://concretgames.com) | [pcpandl.com](http://pcpandl.com) | [helix.com](http://helix.com) | [thq.com](http://thq.com) | [bluetongue.com](http://bluetongue.com)



THQ, Rainbow Studios, Relic, Volition, Inc., Cranky Pants Games, Heavy Iron Studios, Concrete Games, Pacific Coast Power & Light Co., Helix, Studio Australia, Blue Tongue and their respective logos are trademarks and/or registered trademarks of THQ Inc. and/or their respective owners. All rights reserved.



**Rockstar Games is actively seeking experts in the following fields:**



■ **Rockstar Vancouver**

Art Director  
Lead Artist  
Lead Game Designer  
Sr. Tools Programmer

■ **Rockstar San Diego**

Sr. Networking Programmer  
Sr. 3D Graphics Programmer  
Sr. Character Artist  
Sr. Maya Technical Artist

■ **Rockstar Vienna**

Sr. PS2 Programmer  
Sr. 3D Graphics Programmer  
Sr. AI Programmer  
Sr. 3DS Max Technical Artist

■ **Rockstar NYC**

Sr. 3D Artist/Animator  
Associate Producer  
Concept Artist  
Graphic Designer

**Rockstar Games**

622 Broadway, New York, NY 10012

Att: Recruiting

Email: [resumes@rockstargames.com](mailto:resumes@rockstargames.com)

Fax: 212-334-6644

[www.rockstargames.com](http://www.rockstargames.com)

Please indicate the studio and position you are applying for in the subject heading.





# LOOKING FOR A GREAT JOB?

## LET THE GAMES BEGIN.

Are you an artist? Designer? Producer? Activision has an incredible array of opportunities available for virtually every creative discipline. So whether you like to animate, produce or sell (and anything in between), we're ready to talk to you about some of the most sought after jobs in the marketplace – Activision jobs.

- Animators
- 2D/3D Artists
- Art Directors
- Game Designers
- Modelers
- Producers
- Programmers
- Scripters
- Sound Engineers
- Creative Services
- Finance
- IT
- Legal/Business Affairs
- Licensing/Business Development
- Marketing
- Sales

TO APPLY FOR ANY POSITION, VISIT  
WWW.ACTIVISION.COM (GO TO: "CAREERS")

VISIT US AT THE GDC  
BOOTH 460



# ACTIVELY SEEKING TALENT FOR THE FOLLOWING STUDIOS

## SEATTLE, WA

---

<i>Environment Artist</i>	<i>Concept Artist</i>
<i>Senior Engine Programmer</i>	<i>Lead Artist</i>
<i>Senior Gameplay Programmer</i>	<i>Texture Artist</i>

## CHICAGO, IL

---

<i>Character Lead</i>	<i>Development Director</i>
<i>Designer</i>	<i>Technical Director</i>
<i>Graphics Programmer</i>	<i>Sound Designer</i>
<i>Network Programmer</i>	<i>Animator</i>

## SAN DIEGO, CA

---

<i>Software Engineer</i>	<i>Customer Support Manager</i>
<i>Senior Software Engineer</i>	<i>QA Manager</i>
<i>Technical Director</i>	<i>Development Director</i>
<i>Senior Producer</i>	

## LOS ANGELES, CA

---

*Senior Sound Designer*  
*Rendering Programmer*

## AUSTIN, TX

---

<i>Producers</i>	<i>A.I. Programmer</i>
<i>Animators</i>	<i>Designers</i>

FOR FULL DESCRIPTIONS  
AND TO APPLY ONLINE GO TO  
**[JOBS.MIDWAY.COM](http://JOBS.MIDWAY.COM)**



# NEVER SOFT

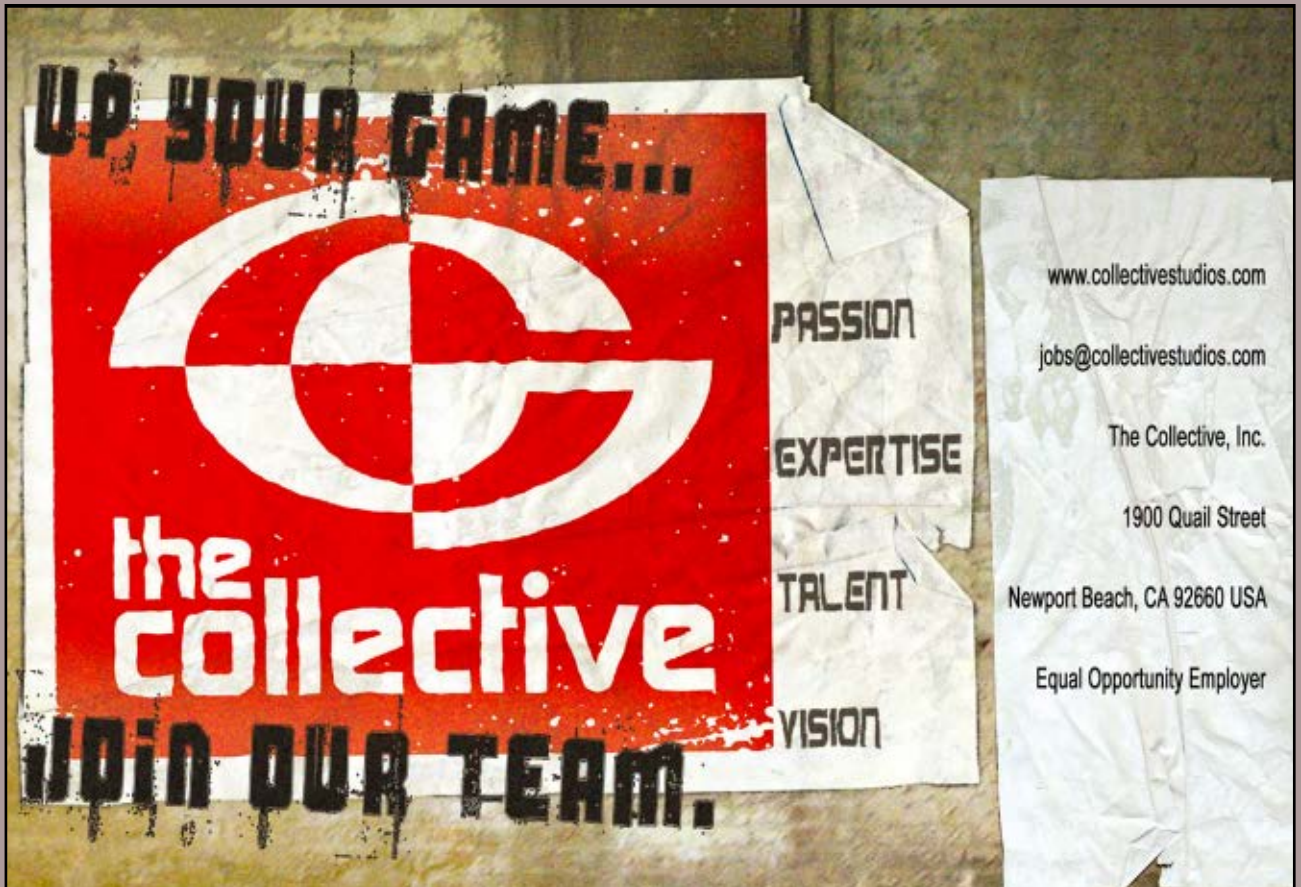
PROGRAMMERS

PRODUCERS

DESIGNERS

ARTISTS

APPLY AT: [WWW.NEVERSOFT.COM](http://WWW.NEVERSOFT.COM)



## Get into the game—teach.

The Savannah College of Art and Design is currently seeking candidates for full-time faculty positions in the School of Film and Digital Media in the areas of game programming and game art.

To learn more about the positions, requirements and the college, please visit our Web site at [www.scad.edu](http://www.scad.edu).

Also visit us at the 2005 Game Developers Conference.

The Savannah College of Art and Design exists to prepare talented students for careers in the visual and performing arts, design, the building arts, and the history of art and architecture. The college emphasizes learning through individual attention in a positively oriented environment.

Car: Visen Brnicevic, Umag, Croatia; Beast: Matt Browning, Tallahassee, Fla.; Character: Aaron Adams, Collegedale, Tenn.; Background image: Stephanie Waugh, Batesville, Ark. Students in the School of Film and Digital Media

### Savannah College of Art and Design

ATLANTA · LACOSTE · SAVANNAH

[www.scad.edu](http://www.scad.edu)

912.525.5532 · [scadhr@scad.edu](mailto:scadhr@scad.edu)



# ATARI

Are you the team's *most valuable player*?  
Are you at the *top of your field*?  
Do you yearn to make games *that the world will pay attention to*?

If you've got the *drive*, the *passion* and *world-class skills*  
- you need to be at **ATARI**.

Atari, Inc., has been at the forefront of video game development since Day One, with a recipe for success that relies on gifted, motivated, veteran leadership.

Atari is searching for top-notch developers looking to contribute their unique skills to the gaming world's next blockbuster projects. Atari has open positions in offices worldwide, in the following disciplines:

- Special FX Artists
- Environment/Level Artists
- Level Designers
- Sr. Programmers
- AI Programmer
- Physics Programmer
- Graphics Programmer
- Producers (all levels)
- Test Plan Coordinator
- QA Testers (temporary)

Atari offers an unparalleled, creative environment that will challenge you and push your talents to the limit. You'll enjoy a competitive salary, bonus plans and plush, custom-designed offices in vibrant communities.

For complete information and confidential inquiries, visit [www.atari.com](http://www.atari.com).

**ATARI**™



Game Design & Development  
Bachelor of Science  
Degree Program



Associate of Science &  
Bachelor of Science  
Degree Programs

school of

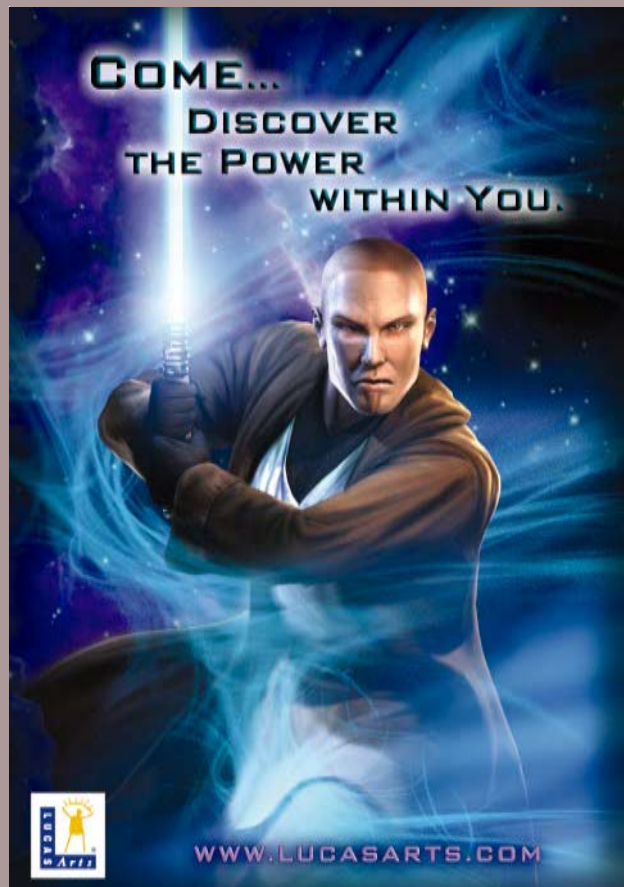
- ▶ Computer Animation
- ▶ Digital Media
- ▶ Entertainment Business
- Film
- ▶ Game Design & Development
- Recording Arts
- Show Production & Touring

800.226.7625  
fullsail.com

3300 University Boulevard  
Winter Park, FL 32792

Financial aid available to those who qualify  
Job placement assistance  
Accredited College, ACCSCT

© 2004 Full Sail, Inc. All rights reserved. The terms "Full Sail," "Full Sail Real World Education," and the Full Sail logo are either registered service marks or service marks of Full Sail, Inc.



WE ASKED DEVELOPERS TO DREAM BOLDLY.  
(Now for the wake-up call.)



MEET THE WINNERS OF THE GLOBAL LBS CHALLENGE DURING CTIA WIRELESS 2005, MARCH 14-16 IN NEW ORLEANS.

Top thinkers, innovators—dreamers—have offered our prestigious panel of judges their ideas for new, location-based products and services. Now it's time to announce the winners of over \$500,000 in prizes, including our grand prize: \$50,000 in cash and a one-year NAVTEQ™ map data territory license.

Join us March 15 at CTIA Wireless 2005.

See the latest wireless concepts using NAVTEQ map data as we reveal the winners of the Global LBS Challenge.



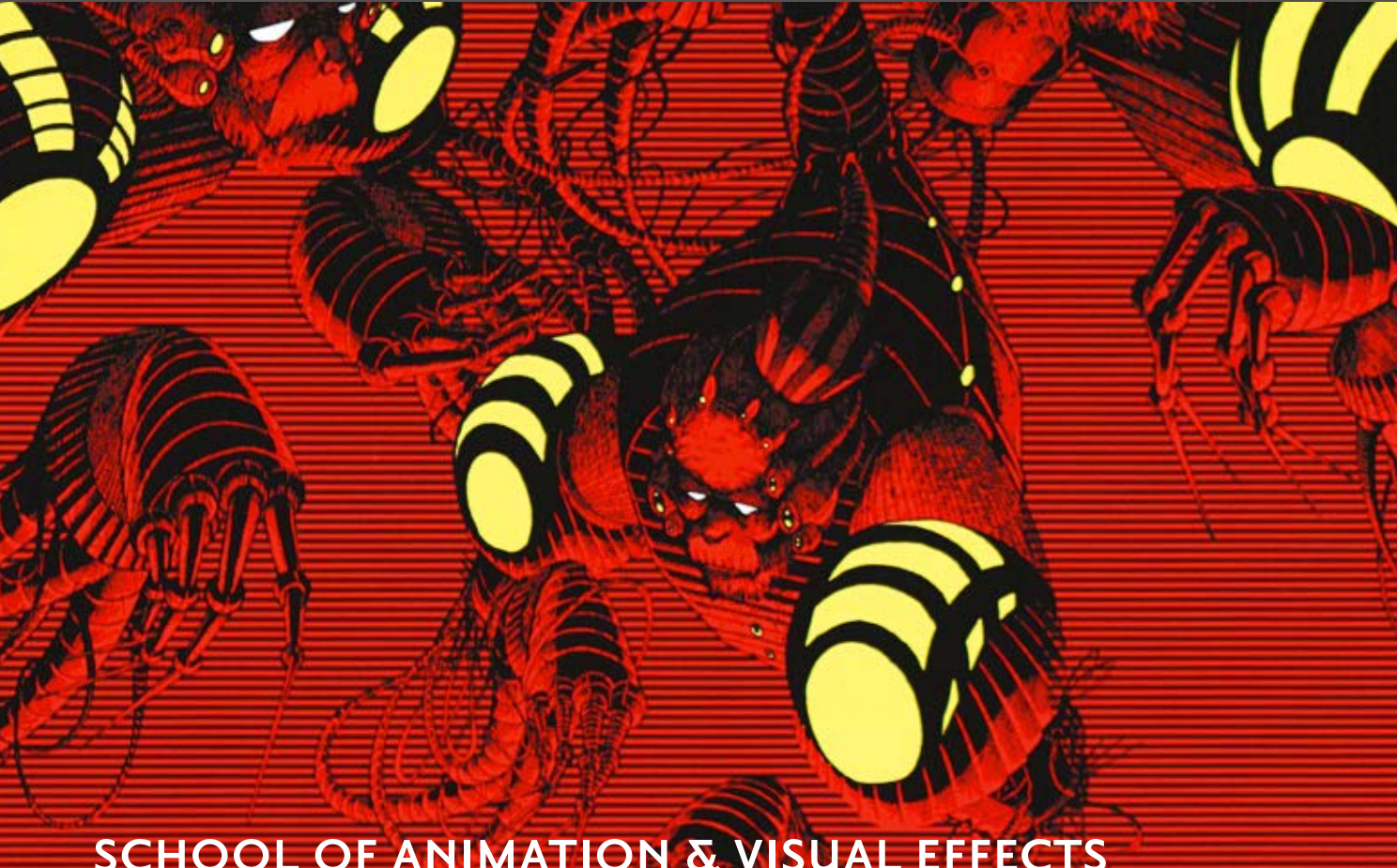
www.LBSChallenge.com

©2005 NAVTEQ. All rights reserved.



ACADEMY *of* ART UNIVERSITY

FOUNDED IN SAN FRANCISCO 1929



## SCHOOL OF ANIMATION & VISUAL EFFECTS

Courses offered in: 2D & 3D ANIMATION | 3D MODELING | COMPUTER GRAPHICS  
FILMMAKING | GAME DESIGN | NEW MEDIA | VISUAL EFFECTS | WEB DESIGN

**REGISTER NOW FOR SPRING & SUMMER SEMESTERS**

AA | BFA | MFA DEGREES | PERSONAL ENRICHMENT | ONLINE COURSES

80% OVERALL | JOB PLACEMENT UPON GRADUATION

**1.800.544.ARTS | WWW.ACADEMYART.EDU**

79 NEW MONTGOMERY ST., SAN FRANCISCO, CA 94105

NATIONALLY ACCREDITED BY ACICS, NASAD & FIDER (BFA-IAD)

Artwork by Erik Siador, AAU Student

# COGSWELL

## The Fusion of ART & ENGINEERING

Bachelor of Art & Science Programs:

- \* Digital Art & Animation
- \* Digital Motion Picture
- \* Digital Audio Technology
- \* Digital Arts Engineering
- \* Electrical Engineering
- \* Software Engineering

WASC Accredited  
Financial Aid Available  
Small Class Size  
Tours Available

**ACCEPTING APPLICATIONS!**  
**CALL NOW!**



**Yes! Tell me more about the Programs at Cogswell College.**

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
Email \_\_\_\_\_  
Phone \_\_\_\_\_  
School Now Attending \_\_\_\_\_  
Present Grade Level  9  10  11  12  College

Digital Art & Animation  
 Digital Audio Technology  
 Digital Motion Picture  
 Digital Arts Engineering  
 Electrical Engineering  
 Software Engineering  
 Fire Science

Where Did You Pick Up This Card?  
\_\_\_\_\_

**COGSWELL**  
Tel: (800) 264-7955 Fax: (408) 747-0764 www.cogswell.edu

**COGSWELL**  
POLYTECHNICAL COLLEGE

1175 Bordeaux Drive  
Sunnyvale, California 94089  
(408) 541-0100

[www.cogswell.edu](http://www.cogswell.edu)

# create YOUR WORLD

CERTIFICATE PROGRAMS IN:

Game Art & Design

3-D Animation

Visual Effects

Intensive nine-month programs for the skills and tools you need to turn your ideas into reality. Financial assistance and career services available. **Apply now.**

[ Contact us at 800.802.2342 or [www.digitalimagingarts.com](http://www.digitalimagingarts.com) ]



The Center for Digital Imaging Arts  
at Boston University

Why does gaming professional  
**Sandy Petersen**  
recommend **The Guildhall?**  
Simple. He helped design  
the curriculum.

Sandy's credits include: DOOM®  
Age of Empires®

QUAKE® Age of Empires II®  
DOOM II®

THE  
**GUILDHALL**  
AT SMU<sup>SM</sup>

LEARN FROM THE PROS.

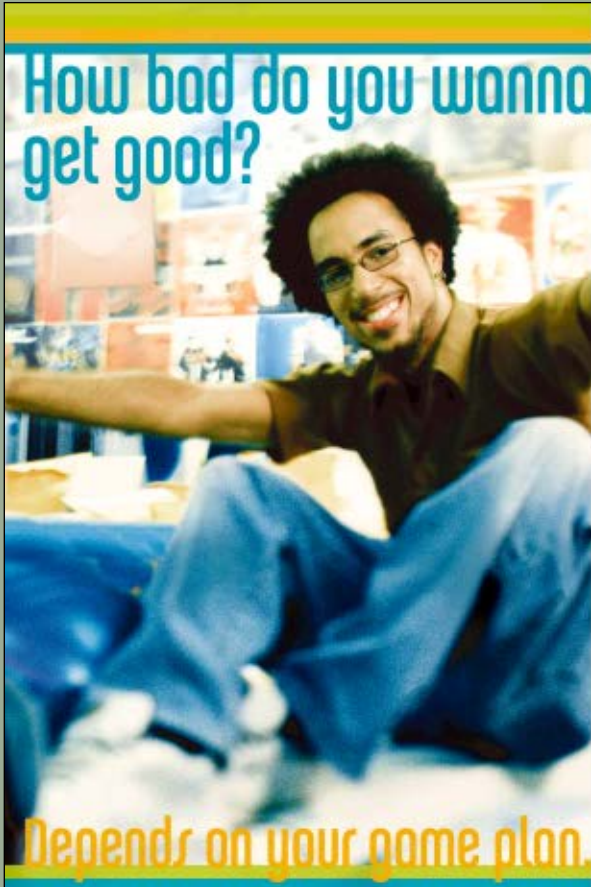
<http://guildhall.smu.edu>

"I wish there had been a Guildhall  
when I was in college."

Sandy Petersen  
Ensemble Studios

Origins International Gaming Hall of Fame

How bad do you wanna get good?



Depends on your game plan.

**Collins College** > A School of Design & Technology  
Main Campus - Tempe, Arizona > West Campus - Phoenix, Arizona

Add a new dimension to your life. >> Earn a B.A. in Game Design

Your education can take you from game research and planning to content development, character development and storytelling – all the way through level design, modeling, programming and project management. After exploring game essentials like C++®, Java™, 3ds max® and AI (artificial intelligence), you could be prepared to make your quest-driven concept a game reality. And you can have a reel to prove it.

**CALL NOW FOR INFORMATION** **1-888-356-7777**  
[www.CollinsCollege.edu](http://www.CollinsCollege.edu)

Find out more about us at the Game Developer's Conference and Expo, March 9 - 11th, booth #665.

Collins College is accredited by the Accrediting Commission of Career Schools and Colleges of Technology (ACCSC), Financial Aid is available for those who qualify. Career Placement Assistance. Collins College West is a satellite campus of Collins College. Not all programs available at all locations.

by Rick O'Connor



**VFS**  
 VANCOUVER FILM SCHOOL  
 WHERE RESULTS MATTER.

**GAME DESIGN**  
 Work Hard, Play Harder

VFS. A proven education for everything you see, hear, and experience in the entertainment industry.

For detailed information and everything you need to know call 1.800.661.4101 or visit [vfs.com](http://vfs.com).



# TAKE CONTROL OF THE GAME

## *Computer and Video Game Developer Certificate*

Learn to develop and manage game environments and visualization applications. Marist College's 100% online Computer and Video Game Developer Certificate teaches the techniques and engineering principles behind today's high-end videogame technology



### *Learn :*

- > C/C++ Programming for Games
- > Mathematics for Game Developers
- > 3D Graphics Programming with DirectX and OpenGL
- > 3D Engine Programming
- > Artificial Intelligence

# MARIST

[www.marist.edu/gce/gaming](http://www.marist.edu/gce/gaming) | 888-877-7900 | [gaming@marist.edu](mailto:gaming@marist.edu)

**"I turn  
dot.coms  
into money."**

—Justan Brandt  
B.A. in Technology Commerce  
Class of 2004



[www.uat.edu](http://www.uat.edu) or 800.658.5744

Available online or on-campus.

- |                   |                              |
|-------------------|------------------------------|
| GAME DESIGN       | VIDEO PRODUCTION             |
| DIGITAL ANIMATION | NETWORK SECURITY             |
| ARTIFICIAL LIFE   | SOFTWARE ENGINEERING         |
| MULTIMEDIA        | <b>TECHNOLOGY MANAGEMENT</b> |
| WEB DESIGN        | GAME PROGRAMMING             |

## ADVERTISER INDEX

COMPANY NAME	PAGE	COMPANY NAME	PAGE
3DConnexion	11	Marist College	69
Academy of Art University	65	Microsoft	23
Activision	58	Midway Amusement Games	59
Aladdin Knowledge Systems	6	Navteq Corporation	64
Alias Systems	3, 47	Neversoft Entertainment	61
Anark	20	New Pencil	71
Atari Inc.	63	Nikitova LLC	8
ATI Technologies Inc.	C3	NXN Software	19
Center for Digital Imaging at Boston Univ.	67	Rad Game Tools	67
Cogswell Polytechnical	66	Rockstar Games	C4
Collins College	68	RTizen Inc.	C2
Criterion Software Ltd.	13	Savannah College of Art and Design	62
Cyberware	31	Softimage	15
Datascope Recruitment Ltd.	60	Sony Ericsson Mobile	27
Day 1 Studios	60	The Collective Inc.	62
Full Sail Real World Education	64	The Hartecenter at SMU Guildhall	67
Hewlett Packard	33-40	THQ	56
Integrity Ware Inc.	71	Trymedia Systems	24
Intersound Post	43	University of Advancing Technology	70
IT Global Secure Inc.	51	Vancouver Film School	68
Lucas Arts	64		

*Game Developer* (ISSN 1073-922X) is published monthly by CMP Media LLC, 600 Harrison St., 6th Fl., San Francisco, CA 94107, (415) 947-6000. Please direct advertising and editorial inquiries to this address. Canadian Registered for GST as CMP Media LLC, GST No. R13288078, Customer No. 2116057, Agreement No. 40011901. **SUBSCRIPTION RATES:** Subscription rate for the U.S. is \$49.95 for twelve issues. Countries outside the U.S. must be prepaid in U.S. funds drawn on a U.S. bank or via credit card. Canada/Mexico: \$69.95; all other countries: \$99.95 (issues shipped via air delivery). Periodical postage paid at San Francisco, CA and additional mailing offices. **POSTMASTER:** Send address changes to *Game Developer*, P.O. Box 1274, Skokie, IL 60076-8274. **CUSTOMER SERVICE:** For subscription orders and changes of address, call toll-free in the U.S. (800) 250-2429 or fax (847) 647-5972. All other countries call (1) (847) 647-5928 or fax (1) (847) 647-5972. Send payments to *Game Developer*, P.O. Box 1274, Skokie, IL 60076-8274. For back issues write to *Game Developer*, 1601 W. 23rd St. Ste. 200, Lawrence, KS 66046-2703. Call toll-free in the U.S./Canada (800) 444-4881 or fax (785) 841-2624. All other countries call (1) (785) 841-1631 or fax (1) (785) 841-2624. Please remember to indicate *Game Developer* on any correspondence. All content, copyright *Game Developer* magazine/CMP Media, LLC, unless otherwise indicated. Don't steal any of it.

## Attend GameDevelopers Conference Mobile

March 7-8, 2005  
San Francisco, CA



Register by February 9, 2005  
and save up to 30%!

Enter to win an iPod mini  
when you register online using  
the priority code: AGDMAG5

Learn more at [www.gdconf.com](http://www.gdconf.com)!

PLATINUM SPONSORS:



Sony Ericsson

GOLD SPONSOR:



SILVER SPONSORS:





# The right way.



NEW PENCIL

[www.newpencil.com](http://www.newpencil.com)

# EXPERIENCE

THE NEXT GENERATION OF MODELING SOFTWARE



FROM  
3DS  
7



POWER  
BOOLEANS



POWER  
SOLIDS

THANKS  
TO ALL OUR  
FANATICAL  
FANS!!!



[ NEIL BLEVINS ]

FROM  
**NPOWER**  
SOFTWARE



[ MIKE THEODORIDIS ]



## POWER BOOLEANS

THE MOST ADVANCED BOOLEAN AND TESSELLATION CODE IN THE INDUSTRY.

- [ CLEAN, LOW POLY RESULTS ]
- [ ADVANCED POLY REDUCTION ]
- [ MULTI/GROUP BOOLEANS ]
- [ ADVANCED QUAD TESSELLATION ]

## POWER SOLIDS

UNLEASH THE POWER OF PARAMETRIC 3-D GEOMETRY MODELING.

- [ RAPID COMPLEX MODEL BUILDING ]
- [ DYNAMIC MESH TESSELLATION ]
- [ IMPORT IGES, RHINO, STEP, SAT ]
- [ VARIABLE EDGE FILLETING ]

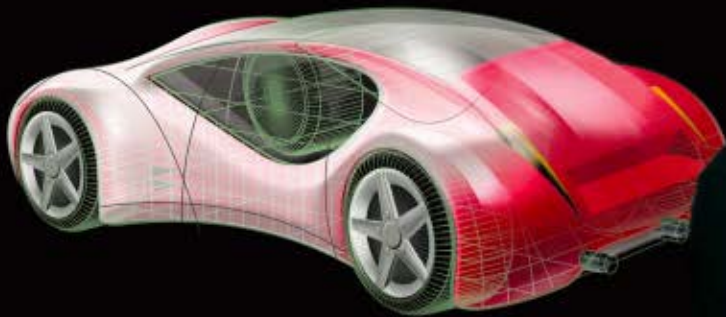
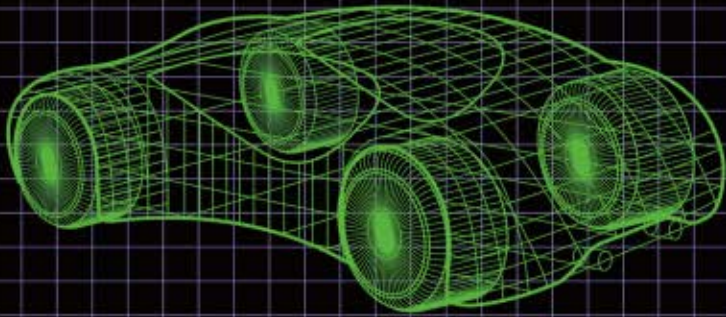
**npower**  
SOFTWARE

# » A THOUSAND WORDS

## ATLUS' SHIN MEGAMI TENSEI: DIGITAL DEVIL SAGA

ARTIST: Kazuma Kaneko





IT WORKS FOR ME



*"...the performance and quality of  
ATI's FireGL™ graphics and the  
HP nw8000 Mobile Workstation  
enable great artists and designers  
to be that much greater."*

When world renowned Savannah College of Art and Design (SCAD) chose ATI's FireGL™ graphics and HP's nw8000 Mobile Workstation it gave faculty and students the ability to maintain their competitive edge while developing award-winning digital content. **MARK THOMASSON**, DIRECTOR OF DIGITAL MEDIA TECHNOLOGY, SCAD said, *"...this is where ATI's FireGL™ technology proved itself."*

FireGL™ graphics accelerators are certified and optimized for professional CAD and DCC applications. ATI delivers a top to bottom range of trusted graphics solutions for mobile and desktop workstations with support for dual monitors, both Windows® and Linux platforms and native PCI Express™ x16 lane support.

Find out how ATI's FireGL™ graphics can **WORK FOR YOU** at: [ATI.com/firegl](http://ATI.com/firegl).

**ATI™ FIREGL™**



# Just Drop Us In!



*The Miles Sound System 7 supports 2D, 3D, streaming, MIDI with DLS, MP3 decoder (with patent rights), voice chat, software reverb, multichannel audio (5.1 and up) and much more! Available for PC, Mac, Xbox, Sony PlayStation2, and next-gen consoles.*



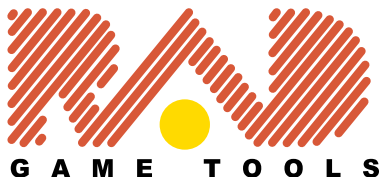
*Pixomatic is our powerful software renderer for PCs. Essentially, it is a high-end DX7 video card in software form! MMX, 3DNow, and SSE optimized assembly is generated at run-time. Don't let low-end hardware or bad video drivers hurt your game's sales!*



*Granny is a powerful toolkit for building all kinds of interactive 3D applications. It features the most efficient and flexible content exporters, data manipulation, normal mapping and run-time dynamic 3D animation system you'll find anywhere.*



*Bink is the finest video codec for games! It provides better than DVD quality at half the data rate along with a perceptually lossless 10:1 audio codec in a simple and clean API. Available for PC, Mac, Xbox, GameCube, Sony PlayStation2 and next-gen consoles.*



©

**THE BEST IN GAME DEVELOPMENT TECHNOLOGY**

for more information:

**425.893.4300**  
**[www.radgametools.com](http://www.radgametools.com)**

"PlayStation" is a registered trademark of Sony Computer Entertainment Inc.