3D VIEW

STEREOGRAPHICS®

Your 3D Stereoscopic Resource

March 1997

CASE STUDY: Gremlin Interactive

Founded in 1984, Gremlin Interactive is among the pioneers of interactive digital technology. With more than 170 employees, it is also one of the largest content producers in all of Europe. StereoGraphics® spoke with James North-Hearn, Gremlin's director of development, about the company's support for SimulEyes®. According to North-Hearn, their initial motivation to provide stereoscopic support was based on pure self satisfaction—they simply thought that stereoscopic viewing was a fantastic idea. What was surprising to the Gremlin development staff was how easy the stereo implementation was.

"Adding support for SimulEyes was quite straightforward and only took a couple of days to complete," said North-Hearn. "In fact, most of the small amount of time we spent was dedicated to fine-tuning the stereo images to get the best effect possible."

The company currently has two games, Whiplash and Slipstream, that support SimulEyes. Gremlin did get some help from StereoGraphics® in their conversion process. Bob Akka, president of Chasm Graphics assisted Gremlin during their first effort to convert their games, but the company has been able to perform subsequent conversions independently with minimal time invested. The company is now in the process of building SimulEyes support in new games.

"We like it, it's great fun to play and we're the most critical of our own work." continued North-Hearn.

The next title to arrive from Gremlin is called HardWars, a mission-based, futuristic flying game due during the first half of 1997. The game will be distributed by Interplay Productions in the U.S. Gremlin Interactive plans to continue adding support for SimulEyes to its games going forward.

Develop Your Conference

StereoGraphics is beginning preparations for the first StereoGraphics' Developer Conference. We would like you to help in developing the conference to suit your needs best.

What topics would you like to see covered? Are there any specific speakers you would like to hear? Do you prefer classroom style instruction or auditorium lectures? Would you like to host a class, lecture or panel?

We want to make our first developer conference a success—and we want to include any suggestions you may have. Please email suggestions or comments to develop@crystale ye4.com

CALENDAR OF EVENTS

Look for StereoGraphics products and/or exhibits at these upcoming trade shows:

CeBIT	3/13-3/19	Hannover, Germany
Computer Game Developers Conference	4/26-4/29	Santa Clara, California

StereoGraphics would like to support you in your trade show efforts. If you are interested in exhibiting your stereo-ready software, please do not hesitate to contact us and we will provide you with SimulEyes or CrystalEyes® for every workstation showing SimulEyes or CrystalEyes compatible applications.

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SPOTLIGHT:

Ster eo Club of Southern Calif ornia

Founded in 1955 to promote the art, enjoyment and science of stereoscopic photography, the Stereo Club of Southern California (SCSC) has provided stereo-photography enthusiasts with an outlet to learn about and exhibit stereo applications for close to half a century. Affiliated with the Photographic Society of America (PSA) and the International Stereoscopic Union (ISU), the club has had the likes of old "Hollywood" types—Harold Lloyd, Dick Powell, Art Linkletter, Ronald Coleman, Paul Hesse, Edger Bergen, Arthur Hornblow—as members and speakers.

In 1997 the SCSC boasts a membership of 250 stereo enthusiasts, including professionals, 3D cinematographers, 3D publishers, stereo photographers, amateurs, collectors creators and hobbyists.From computer generated images to slides to movies that are viewed with polarized glasses, the SCSC appeals to all stereo enthusiasts—seasoned or novice.

Holding formal meetings once a month (except August), the SCSC is comprised of an elected board and officers. The start of the meetings consist of general "business", with the remaining time being spent for a "show and tell" type symposium: Members share what projects they have been working on, stereo slides and films are viewed, and guest speakers from the stereoscopic industry/community often accompany a meeting.

Special Interest Groups (SIGs) are also integrated into the SCSC. One of the most popular is the 3D Movie SIG which has been meeting four times a year for the last 13 years.More relaxed than the general meeting, Movie SIG meetings revolve specifically around the viewing of and sharing of experiences with stereoscopic films and video.

CTO's Report

The Year Of The Game

Last year was a great year for StereoGraphics and the science of electronic stereoscopic display. It saw the introduction of SimulEyes æ a product that gives the same kind of stereoscopic capability to consumer PC users that we offer workstation users with CrystalEyes.

Our target market for SimulEyes is the PC gamer and I must admit that I am excited because computer gaming is the number one home computer application. For that reason, StereoGraphics is committed to insuring that quality stereoscopic programming resources are offered to all game developers.

By the end of the year, we had over 750 registered domestic and international developers in our program and we had participated in the conversion of many software titles. In 1997 we will continue to supply developers with the support to create 3D titles. This support includes SDK updates, white papers on stereo-vision development and formats and in the near future, the first StereoGraphics' Developer Conference.

We will continue to support qualified developers and help with the conversion of titles. More importantly, we want to help developers from the inception of their production process so that their stereoscopic implementation is as stunning to see and immersive to experience as possible.

There are two reasons for our desire to support the developer from the outset. Stereoscopic support is easier to implement when it is included from the beginning of development compared to converting an existing title. Also, a game that is designed with stereoscopic effects in mind from the start will often be more visually arresting.

We want the game designer to be able to maximize the stereoscopic effect by taking advantage of the true tri-dimensional nature of the medium. I'm talking about conceiving of the game playing space in terms of a volume with in-screen and off-screen effects. Only by conceptualizing these effects from the start will developers be able to maximize the potential of this compelling new medium.

All the best for you in the new year.

— Lenny Lipton
Founder, Chief Technical Officer

This year, the SCSC and the 3D Movie SIG are proud to be sponsoring the first annual 3D Movie/Video Competition. Established under great demand for and interest in 3D movies, the competition will enable members to exhibit their skills and understanding of the 3D movie genre.

Submissions, on either film or video, are developed completely in stereo, and are judged on the quality of the image within the limitations of the format, titles, creativity, editing, story—and most importantly: 3D effect. Most of the entries will be viewed using polarized glasses (made famous in the '50s), while several will be viewed utilizing LCD technology.

To learn more about the Stereo Club of Southern California or the upcoming 3D Movie/Video competition, please contact Lawrence Kaufman at kaufman@micr osys.net or visit the SCSC website at http://www.stereograph y.com/gravenimages/markyour.htm

Hardware Page-Flipping Support

We mentioned in the December issue of 3Dview that Rendition offers hardware page-flipping support for stereo. But what exactly does that mean, you ask?

On conventional video chipsets, there is a register which determines what part of video memory will become visible during the next vertical retrace. This is called the display start address register, and traditionally there only needs to be one of them.

However in stereo applications we need to rapidly alternate the video display output from two different views, one for the left eye and the other for the right. Effectively we have to have a stereoscopic pair of images pre-loaded into video memory and have a driver alternate each image as they are loaded in the display start address register. All of StereoGraphics' stereo page-flipping drivers do this.

The Vérité 1000 from Rendition has provided a valuable addition to support stereo. The Vérité contains two display start address registers which automatically alternate the display when stereo is enabled. In this scheme, the graphics programmer still provides a stereo pair of left/right images in video memory—but then loads the video address locations into the dual display start registers. Since the dual registers are alternating display output automatically, no software driver is needed to enable page-flipping.

With recent developments at these video companies, we will also be seeing hardware stereo support from:

- 3DLabs Permedia
- Alliance AT3D

As of this writing there are several other chip manufacturers who have committed to supporting SimulEyes in their new 3D chips. Due to non-disclosure, we can't disclose who they are yet. However, we'll be letting you know about major developments as they happen.

Notes from the DeveloperDen...

Page-Flipping Driver for Win95 Dir ectX
StereoGraphics is posting a Beta version of our new v2.0 page-flipping driver for Win95 DirectX. Unlike the previous v1.0 driver which supported only 320 pixel-wide, mode-X modes, the current v2.0 driver will work with any resolution supported by DirectDraw.

With the v2.0 driver, the VxD driver will make callbacks to the DirectX application to schedule left or right video pages with DirectDraw's Flip ( ) method. The DirectX programmer creates a callback procedure in the main application which must be registered for the SimulEyes driver. When stereoscopic mode is enabled, a timer based interrupt handler will call the registered callback procedure and perform left/right page flips automatically.

The programmer is free to use 2 buffers for normal front/back page-flipping, or 4 or more buffers for stereo double-buffering.

Check out some of the modified DirectDraw examples to compare stereo page-flipping operation with default mono double-buffered animations. These are located at:

ftp.stereographics.com/Outgoing
ddex3svr.zip = modified DirectDraw Example #3 demos page-flipping in action
flp2dsvr .zip = modified DirectDraw 2D Flipping Cube demos page-flipping animation
s3winsvr.zip = modified S3D DirectDraw example with 3D effects(must have S3D SDK as registered S3 Developer)*

Please note that StereoGraphics have developed this driver on its own, allowing the DirectX programmer the flexibility to write the page-flipping callback procedure. As of this writing, Microsoft still has no plans for stereoscopic support in DirectX 4. StereoGraphics is asking Microsoft consider our strategy for implementing stereo in DirectX, and would appreciate if our developers were to contact Microsoft and urge them to settle on a stereo specification.

* The S3 SDK Release 2.0 includes StereoGraphics API support. For more information, send email to pcgamedev@s3.com or visit S3's website at: www.s3.com.

VESA Stereo Support
In January, the VESA Software Standards Committee approved proposed language to add stereoscopic support to the VESA BIOS Extension Core Specification 3.0. This draft will be circulated among the general VESA membership for review, and eventual voting.

Stereo support is added to VESA BIOS function 07h for setting the next visible video page address. Normally this function accesses the extended registers for the video controller's display start address.

When stereoscopic mode is enabled, the video controller will reload the display start address every other frame instead of every frame. In this scenario, during alternate frames, the display will continue where it left off from the preceding frame. So, if a graphics programmer has located a stereo pair of images with right image immediately following the left image in video memory, the display controller will effectively alternate between the two images for a stereoscopic view.

This approach maintains compatibility with video chipsets that use a single display start address register in their designs. It will also be compatible with video chipsets which implement dual display start address registers, like the current Rendition Vérité 1000.

Please note that if the hardware capability is lacking in the detected video chipset, it is up to the programmer to implement a timer-based interrupt handler for performing stereo page-flipping. This is what StereoGraphics has been doing with its page-flipping drivers to date.

To look at the VESA BIOS 3.0 draft, visit VESA at www.vesa.org

Contact StereoGraphics

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The big push for StereoGraphics' web site in the new year will be in making our web site a more useful tool for the distribution of information on stereoscopic development. We start this month by posting an article from StereoGraphics founder and CTO, Lenny Lipton, which explains stereo-vision formats for video and computer graphics. Next month, we will post a developer profile from a company who has successfully implemented stereoscopic support in their software.

Another area of emphasis for our web site will be on providing developers links to other sites of interest. These could be companies with new games out, or sites providing technical information on stereoscopic development.

All of which brings us to the third part of our web plans for the new year: We want our site to be an area of on-going interest to developers, not just by providing the latest information on stereo development, but by getting you actively involved in the content we put there. If you would like your company to be the focus of a developer profile story, send e-mail to web-mast@crystale ye.com Or if you just want to express an opinion on the content,add a link to our site, or tell me about another web resource of interest, feel free to drop me a line.