DIGITAL STUDIO - REACHING OLYMPIC HEIGHTS AT ReZ.n8 PRODUCTIONS (cover story)

After a decade of digital content creation, what do you do to celebrate your 10th anniversary? If you're ReZ.n8 Productions, you have a party, which is what the company did at its Sunset Boulevard Studio in Hollywood last October. There was much to celebrate. The staff has tripled in size in the past two years. 1997 was ReZ.n8's best year ever, and it is expanding from its broadcast graphics base into more commercial work. And for the third consecutive Winter Olympics, ReZ.n8 was producing the on-air graphics and design for the broadcast by CBS.

The party was fun, everyone had a good time...and then it was back to work. As anyone who watched the Nagano Olympics telecast can attest, the hard work paid off with striking results. The rich, earth-toned background shades of the openers with layers of text flowing gracefully over them at oblique angles set an elegant theme.

In addition to the opening title sequences, transitions, and on-screen graphic elements for athlete names and scoring, there were "fly-through" animated sequences starring "Ergo Man," a 3D CGI athlete designed to help the audience understand what they were watching and what was important in judging the competition.

Five people from ReZ.n8 went to Nagano for on-site production to deal with daily needs and full graphics support as needed. They included Paul Sidlo, ReZ.n8 founder and president, who served as the company's creative director. Others were Dale Herigstad, art director; Cathy Perow, producer of the graphics package; David Necker, art director; and Michael Onaitis, designer. All holed up for a month at the Broadcast Center in Nagano, working closely with CBS' Nagano staff such as Doug Towey, executive director for CBS Sports.

But impressive as the Olympics package was, ReZ.n8 is far from a one-note tune. It's racked up numerous awards-including three Emmys since 1992, and its client roster includes luminaries such as the CBS Evening News, Warner Bros. International Cable, the FOX Network identity and news packages, and Citibank International's Web site.

ReZ.n8's staff grew from 20 people to the current 58 in less than two years, and the story of how it managed that expansion is a timely one for an industry in transition.

ReZ.n8 is a cross-platform facility, with roots on the SGI and Macintosh platforms. But when equipping for rapid growth, the economics of NT-based workstations won out. Their price and performance gave both the animators and the accountants something to smile about. Herigstad, who oversaw ReZ.n8's Nagano broadcast design package, as well as those for the 1992 and 1994 Winter Olympic Games, notes, "Since 1992, there have been some tremendous advances in computing power."

Paul Sidlo, founder and company president, says he never wanted to grow to this size before this because the technology wasn't mature. Now, he says, it has matured.

"To be able to scale to this size two years ago, it would've cost $20 million in hardware-why would I want to do that? Do you know what the interest would be on that kind of money?"

Today, about 85 percent of the studio's workstations now run Windows NT. Intergraph TDZ 425, 610, and 2000 workstations are the animators' choice while Compaq 5100 and 6100 workstations are also common. The network is made up of Intergraph and Compaq servers. An Intergraph RenderRax Renderfarm with 100-plus processors provides the rendering power.

"ReZ.n8 will always employ the highest standard of production tools available," says Sidlo. "Intergraph has demonstrated true media expertise in its products. We can and do depend on these systems for high-end 3D graphics performance."

He also gives a nod to a spate of other production tools. One is from London, England-based Second Nature Industries, the creators of Hypermatter, a 3D Studio MAX plug-in that enables animators to create complex, natural-looking motion and character animation.

Another is the integration of the Cinebase Digital Media Management Sytem (DDMS) to help bring a new level of efficiency to the production process.

This DMMS is the center of a new production process described by Sidlo as the "Integrated Studio" or "Deep Tech." Says Sidlo, "Cinebase allows us to more effectively manage our digital assets. The fact that it is platform-independent allows our animators and designers to share content in collaborative projects, whether they're using Macintosh, SGI, or Windows NT workstations."

ReZ.n8's work with the Winter Olympics is one of the first big projects to employ this Integrated Studio concept.

The Integrated Studio is described, in the mantra of the company, as an "adaptive, dynamic, scalable" production system.

But these ideals embody more than hyperbole. This is an industry where, Sidlo says, "The only thing constant is change."

"Adaptability is one of the key words," says Sidlo. "If you base your business philosophy and the whole way you run a studio on that, you can survive. If you don't, you're going to be dead."

One of the other aspects of ReZ.n8 that has helped it prosper-in an era when some effects houses are cutting back-is scalability of operation.

Scalability helps ReZ.n8 handle the increasing complexity of animation. Citing the animation in Titanic, Sidlo says, "As we move the benchmark for high-quality animation, complexity becomes an ongoing issue and it is reaching a point where the process itself can no longer support complexity.

"So the market needs to address it, or self-organize. 'Self organize' is a technology that allows you to take character animation, for example, where you have hair, lip syncs, and 150 expressions. [You then develop a] huge metadatabase associated with your character."

Making a character real makes it complex. To integrate the thousands of attributes necessary to make a character real is something Sidlo maintains a single animator cannot do. You must create architectures.

He cites as an example the Hypermatter plug-in for 3D Studio MAX that was written by Blair

Harrison, now ReZ.n8's chief technology officer.

"It's a physical-based attributes based program," Sidlo says. "You apply physics to a model...you say it has this much elasticity, this much damping, this much gravity, and so on.

"Then the primary motion drives the secondary motion for free."

Sidlo continues, "So if I have a fat character made out of jelly and I move him, the jiggling of his belly comes for free. Now if I were a character animator using key frame technology to try to make it work with morphing targets and all that other crap, it wouldn't work. The complexity would kill you."

Sidlo explains that the complexity of animation is hurting many digital effects houses because they cannot scale to handle the ever-increasing demands placed on animators.

"That's what's going on in all these animation companies today-complexity is starting to kill them because they don't know how to predict outcome in a complex environment. There are too many variables."

"So now you've got a big problem," says Sidlo. "What ReZ.n8 does is look at how to organize complexity."

Another factor driving the complexity of animation and special effects is that the power and affordability of workstation-class graphics machines and animation packages means such technology is trickling down to the consumer market.

"Everybody wants animation and graphics today," says Sidlo. Products such as Bryce 3D retailing for less than $200 and the sub-$1,000 desktop computer make it possible for any consumer to create fairly sophisticated animation at home.

As this trend continues, the envelope gets pushed a little further. Home computer users will be able to create more complex animation, which will place even more demands on professional animators.

"As more complex animations become the norm, managing complexity is going to be the bugaboo afflicting animation houses that aren't prepared," says Sidlo. "If you're going to be out there, you've got to be WAY out there. If you're not, you're going to be WAY behind."

Does Sidlo see ReZ.n8's ability to handle complexity through this Windows NT-enabled Integrated Studio concept as a key advantage?

"Absolutely," he answers without hesitation.

How did the studio move from a primarily SGI- and Macintosh-based production facility to the current facility where 85 percent of the machines are NT and SGIs and Power Macintoshes are maintained only for legacy operations?

According to Tim Brown, art director and animator, the conversion to PCs began about four years ago, shortly after he came onboard. He doesn't like to "toot his own horn," but says the conversion came about at his behest.

He was aware of what was possible with an Intel system, but knew it would be an uphill push to convince others-especially when many of the tools available for Unix and Mac systems were not available for NT machines.

His first step was to take the 486 laptop that Sidlo was using for business applications on the road-albeit a "souped up" laptop-and install a DOS version of 3D Studio. He then created a simple animation to show Sidlo what could be accomplished on an Intel machine.

After this initial demonstration, Brown was given "permission" to use the PC for some of the animation, but ReZ.n8 did not support him officially. Initially, Brown was forced to use machines from the business side of ReZ.n8 that he linked together. He and others also built some of the initial machines from scratch.

Until Windows NT 3.51 was released, PC animation at ReZ.n8 was a DOS-based operation running the pioneering 3D Studio.

As soon as 3D Studio MAX was released for Windows NT, ReZ.n8's switch to the PC platform accelerated drastically. As the capabilities of Windows NT became greater and the machines began to hold their own with high-end Unix or Macintosh workstations, it became necessary to invest in the proper hardware.

The SGI tech support people naturally dismissed these initial "Frankenstein" business machines that Brown and his cadre were using in the early days, all too happy to "not have to deal with THOSE machines," as Brown recalls.

After the release of Windows NT 3.51, Brown said ReZ.n8 needed to wait a few months before 3D Studio MAX and the other tools Brown and the other artists were using became available on the NT platform. Once the tools became available, ReZ.n8 began its love affair with the Windows platform, specifically Intergraph, and the company began its full court press to embrace NT.

Brown laughs when he remembers the resistance among the other animators on staff to the concept of animating on the PC.

But, he says, the fact that "NT's proven to be a real stable OS" helped break down resistance. Stability, of course, is particularly important for high-end 3D graphics. But beyond that, software availability and affordability made the NT choice even more viable.

The advantage of NT over SGI systems in particular is that other tools that are not critical for every artist to have at their disposal all the time, like Adobe Photoshop, can be made available for every artist.

Before NT, Brown says, several artists may have needed to share a copy of Photoshop because the SGI version was so expensive

Now, digital effects studios "can afford to have every tool on every desktop." To Brown, Windows NT is about "putting the most tools at your artists' disposal."

Brown acknowledges that there is still resistance to the Windows NT workstation among

professional animators outside of ReZ.n8. Maybe even inside the company there is some lingering resistance. But it's nothing like it was a few years ago.

As ReZ.n8 advances into its next 10 years, the instincts that have guided it to the 10-year milestone seem sound: Organize for complexity and be prepared to accept constant change. In a world where nothing else is predictable, those are among the few places where an animation and special effects business can plant a flag.

ReZ.n8's Olympic effort

Among the many graphic elements that ReZ.n8 created for the Winter Olympics, some of the more interesting animations were those designed to enable the television audience to experience the action from the athlete's perspective, i.e., creating a virtual environment and demonstrating the sports by giving the audience an opportunity to feel as if they were racing the slalom course or shooting down the bobsled track.

Many of these virtual environments, made extensive use of "Ergo Man," a stylized 3D CGI athlete that helped demonstrate performance and highlight the level of detail that the judges are grading. One of the more difficult animations, and one that relied heavily on 3D Studio MAX for its success, was the men's downhill slalom.

Cathy Perow, who produced the Olympics graphics package for ReZ.n8, explains how the thrill of the downhill slalom was created for the viewer at home. In order to create a virtual slalom course, the first thing that needed to be built was the mountain. DEM data was brought into auto*des*sys' form*Z to create a topographic map of the slalom course at Nagano.

Says Perow, "The thing that was most difficult was the sheer amount of data we had to deal with- that was a challenge throughout." The actual mountain terrain was digitized at about six-foot increments, yielding a downhill course that is accurate to two meters resolution.

Once the mountain data was entered, it was brought into 3D Studio MAX, and the slalom run was tracked down the mountain. A virtual skier was programmed using Inverse Kinematics. Perow explains "that [IK] enables us to make him move the arms in a certain way, move the feet a certain way, and turn in a way which is very realistic."

"Once we had all the data gathered and manageable, we had to create the camera movements," she says. To make sure everything worked, they had to start testing. "We put him on a track [on the virtual mountain] and sent him down." Naturally, once they started testing, "we found glitches that we had to address."

After the glitches were worked out, and the Ergo Man skier was moving down the mountain, "we needed to add in the snow texture and then 'connect' him to the mountain and have him react to the snow."

"It [the men's slalom] was a very challenging piece, but a very rewarding one," says Perow. "It allows viewers at home to view a 3D simulation of the event from the athlete's perspective."

Asked if she was pleased with the results, Perow replies, "It turned out really cool!"

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