



As self-proclaimed pioneer of the PC graphics industry, nVidia has made a massive name for itself over the last 10 years. Robert Blincoe traces its rise to the top of many a gamer's wishlist



Supplier profile: nVidia

The world of computers is dominated by hyperbole extolling the latest this and the fastest that, all backed by whizz-bang scientific jargon and an impressive array of vital statistics. The graphics sector of the industry leads the field in this marketing approach and nVidia, the market leader in most areas of graphics chip sales, is also head of the pack in gushing about its achievements.

According to recent press releases nVidia's products are: "awesome", "perfect", "the catalyst which pushes the industry to unprecedented levels" and herald a "new age of cinematic visual effects for the desktop". If that doesn't shift a few computers, you can't knock them for trying.

Picture perfect

The company was formed in 1993 by a group of engineers who had worked at SGI (Silicon Graphics), a heavyweight computer graphics workstation company. The groundbreaking film *Toy Story* was developed on a bunch of SGI machines and SGI is still the name to drop in Hollywood if you're doing computer-generated work.

The company designs graphics chips and has them made by Taiwanese

company TSMC. It then sells them to about 14 partners that build them into graphics boards. But the company's involvement doesn't end there. Alain Tiquet, nVidia's European marketing director, says: "We sell them the chips and we give them the design of the boards because we understand how the chip works. The products all use our reference design. In the past people could design the graphics boards themselves, but now it's too complex."

Since its launch in the early 1990s nVidia has enjoyed rapid success. Its first graphics chip, the NV1, was released in Japan in 1994 and used in the Sega Saturn. The company has subsequently spearheaded its market domination on the back of gamers prepared to spend top dollar for the ultimate PC graphics experience. It also provides the meat inside Microsoft's Xbox and is expected to produce the goods for Xbox2, even though the two companies are at loggerheads over pricing.

Sparring partner

The single challenge to nVidia's supremacy in the graphics chip market comes from rival ATI. For a long time nVidia was by far the brightest star, producing the

highest-performing graphics chips. In July 02, however, ATI came up with the Radeon 9700 which snatched the performance lead.

The relationship between nVidia and ATI can be likened to that of chip manufacturers Intel and AMD. Intel was (and is presently) the dominant player in processors and leads the field in performance with each fresh release. But there was a period not too long ago when AMD got ahead of the game in both marketing and performance. Intel has recently regained the crown with its new 2.4GHz, 2.5GHz and 2.8GHz Pentium 4 chips and by being a whole lot more attentive, or heavy, with its system builder customers.

Likewise, nVidia has reacted to ATI's challenge with a change in its behaviour. The marketing director of one system builder, who asked not to be named, said nVidia had become very arrogant and difficult to deal with. After ATI powered itself on to the scene, things changed: "nVidia comes straight back to you. It's now very eager to help."

Latest blockbuster

The fight is far from over, though. In November nVidia pushed itself back into the performance game, a little later than it had hoped, with its latest graphics chip family, the nVidia GeForce FX.

According to the press release, this new GPU (graphics processing unit) is "based on the new nVidia CineFX architecture and delivers cinematic-quality graphics and special effects in real time".



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At the launch company co-founder, president and CEO Jen-Hsun Huang, said: "Computer games today are fast and exciting, yet they still lack the ability to engage us emotionally. With the GeForce FX GPU, game developers now have the power to create awe-inspiring visuals and bring character emotion to life. GeForce FX enables a new type of interactive expression we call cinematic computing."

The vital statistics accompanying this latest hyperbole say the GeForce FX renders graphics up to four times faster than the Ti 4600, nVidia's former top-performing chip. And better than that, it is said to be approximately 25-50 percent faster than the ATI Radeon 9700.

The GeForce FX uses a faster 500MHz processor (against the 325MHz of the GeForce Ti 4600) and also promises more memory bandwidth. The new GPU is "the result of 10 years of passionate effort by the best 3D graphics engineers in the business" and, if you're turned on by technical talk, can compute 375 million programmable vertices per second, four billion pixels per second and 16 billion AA samples per second.

Fixed income

Graphics boards built around the GeForce FX GPU are expected to start appearing in early 2003. But even with its GeForce4 Ti 4600, nVidia wasn't doing too badly.

The company has managed to continue gaining market share against ATI, despite

↑→ nVidia claims that GeForce FX brings characters to life. That's fine – as long as it's Tinkerbell not the Scottish ogre

delays in launching the new chip. According to a report by Mercury Research, in the third quarter of 2002 nVidia's share in the worldwide shipment of standalone graphics controllers rose to 58 percent from 56 percent the previous quarter. ATI, despite releasing the Radeon 9700, lost market share, seeing its portion shrink from 36 percent in the second quarter to 33 percent in the third.

In the January 03 issue of *PC Advisor*, eight of the listed Top 10 Power PCs contained nVidia's GeForce4 Ti 4600, including the top four machines. In the same issue, six of the Top 10 Budget PCs boasted nVidia processors, as did eight of the Superbudget PCs. This proves that nVidia is continuing to grow strong in spite of the worst hi-tech recession for more than a decade.

But where nVidia does have a weakness is in the notebook market. None of its chips made it into *PC Advisor's* January 03 Power notebooks chart. ATI processors sat inside the top three machines, S3's ProSavage appeared in the number four slot with ATI back again at number five. In the Budget notebook arena, things were slightly better with nVidia grabbing two of the five slots.



This lack of dominance in the notebook market is historical. ATI had a notebook-specific processor ahead of nVidia. When nVidia finally got into the game it couldn't produce enough of its chips to forge partnerships with all notebook players. Instead it elected to get close to Toshiba – another reason why

it's not the dominant force in laptops. The company is addressing this balance with the GeForce 4200 Go, a mobile version of the desktop Ti 4200. Notebooks featuring the chip should start shipping in the first quarter of 2003.

nVidia at a glance

- Founded **1993** by a group of engineers from SGI (Silicon Graphics), Hollywood's top computer graphics player
- Number of employees **1,600**, two thirds of which work on chip design
- Turnover **\$1.37bn** for the year ending January 02 – up 87 percent on 2001
- Business Designing computer graphics processors which form the heart of Microsoft's Xbox and a large number of graphics cards.
- Headquarters **Santa Clara, California**
- UK office **Theale Court, 11-13 High Street, Theale, Reading, Berkshire RG7 5AH**
- Telephone **0118 903 3000**
- Website **www.nvidia.co.uk**

Louise Derbyshire, communications manager with online retailer Dabs.com, says: "The majority of PCs/laptops we sell include graphics cards based on the ATI chipset, simply because that's what manufacturers are including as part of their standard specifications.

"Most customers aren't concerned about graphics card type as long as they know one is in there. However, for those who need more sophisticated graphics – for example, gaming enthusiasts – our experience is that they're more likely to upgrade with a specialist graphics card rather than stick with the basic component provided."

Off the shelf

Returning to *PC Advisor's* January 03 charts, ATI-based cards bagged three of the top five positions in the graphics card rankings. ATI's high-end Radeon 9700 Pro chips were in the Best Buy and Recommended boards, while the budget Radeon 9000 Pro card sat at number four. Taking up the third and fifth positions, on AOpen and PNY boards respectively, was nVidia's GeForce4 Ti 4200.

At Dabs.com, however, nVidia-based graphics cards are king. According to Derbyshire: "About 75 percent of the graphics cards we sold in October 02 were based around the nVidia GeForce chipset, while 25 percent used other processors. Of this 25 percent, around 90 percent were ATI."

As well as AOpen and PNY, board-making partners include Creative Labs, Asus, Chaintech and Abit. These companies are described as approved or certified partners.

Integrated chips vs graphics cards

Buying a PC or notebook with its own separate graphics processor, as opposed to one integrated into the PC's chipset, can add between £50 and £100 to the price. It's the difference between buying a bog-standard CD player or hi-fi separates set up with gold-plated interconnects.

The difference in price is more of an issue for businesses and buyers within the education sector, as it's likely that they will be buying a large number of computers in one go. These kinds of customers will be satisfied with onboard graphics performance, so it's down to the home enthusiast or home office user who is prepared to pay for a graphics boost.

This is in spite of nVidia pushing graphics as a business solution. Alain Tiquet, nVidia's European marketing director, says: "A lot of corporates don't need 3D, but it is going to come. If it's in the PC, software developers are going to use it."

To get it into the PC, ATI, nVidia, Intel and a number of other companies are manufacturing integrated graphics and sound chipsets to try and establish brand names (and charge a premium) in the onboard sector of the market. In nVidia's case it's the nForce 2 which Robin Daunter, research and development manager at Evesham, thinks is the best around. "Nothing can touch them at the moment. They've done a really good job. It's also got an excellent sound decoder. ATI still haven't got it right. But if people want performance, they'll always want an add-in graphics board," he says.

A major drawback to nVidia's nForce is that, due to a licensing spat with Intel, it's an AMD-only platform.

If consumers have any problems they should contact the maker or the system builder which used their graphics card, rather than nVidia. In the UK nVidia has only a sales and marketing operation.

At the time of writing nVidia has 28 products on sale and is very proud that it has one driver for its entire range. "The driver we have today works on products we sold four years ago," says nVidia's Tiquet. When the latest version of the driver became available online in October 02, it boosted the performance of a four-year-old nVidia TNT chip by 10 to 15 percent.

"There is a value here for PC manufacturers," says Tiquet. "You don't have to worry about which driver fits which product. Technical support knows which driver to use. It improves the quality of service and the cost of service."

Future focus

So nVidia is in good form, poised to reassert its market dominance with its GeForce FX and GeForce 4200 Go mobile chips. However, according to one system maker this is bad news for the consumer. "If they go back to dominance, they go back to arrogance."

Tiquet is certainly confident in the brand. "What customers like is having a stamp. Having nVidia is like having Intel inside." And PC maker Evesham is excited about the future. Research and development manager Robin Daunter thinks the GeForce FX looks good. And nVidia needs it, because ATI "is still the king" when it comes to add-in board performance and price.

As nVidia modestly says of itself: "By providing the industry's best games developers with future-generation hardware and software tools, we're hoping to unleash no-holds-barred creative talent and take 3D games to a new level." Amen. ■

