



NVIDIA® QUADRO® CASE STUDY

Framestore

Framestore mobilizes NVIDIA Quadro for gold standard VFX performance

AT A GLANCE

CUSTOMER PROFILE

Company: Framestore

Industry: visual effects

Region: worldwide

Size: up to 900 employees

SUMMARY

- Framestore creates extraordinary visual effects for the advertising, entertainment and film industries
- The NVIDIA Quadro K2200, K4200 and K5200 delivered revolutionary performance improvements and game-changing new workflow models in MARI and Faceshift

CUSTOMER PROFILE

From its offices in London, Montreal, New York and Los Angeles, Framestore provides world-leading visual effects for a wide variety of clients. Its scalable team of up to 900 artists, computer scientists, producers, animators, developers and engineers creates extraordinary content for the advertising, entertainment and film industries. In 2014 Framestore collected a Best Visual Effects Oscar and BAFTA for its work on Gravity and other recent credits include Tom Cruise blockbuster Edge of Tomorrow, an immersive virtual reality experience for Game of Thrones, and advertising campaigns for, among others, Lipton, Qualcomm, Axe and M&M's.

CHALLENGE

Framestore has built a reputation as one of its industry's most creative and innovative companies, working at the bleeding edge of technology to craft groundbreaking visual experiences. Its team handles a large number of highly varied projects so achieving a quick turnover while maintaining Framestore's trademark commitment to quality is a top priority. The workflow for most of its artists and engineers focuses on processing many small projects quickly on a wide variety of applications using the local resources available on their workstations.



SOFTWARE

- Faceshift
- The Foundry MARI 2.6
- Autodesk Maya

HARDWARE

- NVIDIA Quadro K2200
- NVIDIA Quadro K4200
- NVIDIA Quadro K5200

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Steve MacPherson
Chief Technology Officer
Framestore

REASONS FOR QUADRO

- 40% speed-up of facial capture rigging in Faceshift, hitting the 'gold standard' of over 24 FPS to enable real-time interactivity and manipulation
- The ability to work with more than twice as many layers in MARI and enable interactive real time displacement mapping
- Cards run cooler, preventing workstations overheating and saving on energy bills for coolings

This demanding cadence means the Framestore team puts their computer hardware under constant pressure in a never-ending search for faster performance and new capabilities to fuel their artistry.

"As the lines blur between the physical and the simulated, we regularly find ourselves exploring methods to take advantage of advanced graphics capabilities that more faithfully express the artists' intent," said Steve MacPherson, Chief Technology Officer, Framestore. "Whether manipulating increasingly complex and detailed scene geometry, running advanced computational fluid dynamics simulations of physical phenomena or establishing a compelling, real-time and fully immersive presence within a totally CG world for the Game of Thrones experience, our artists and developers are insatiable in their desire to recreate a reality every bit as detailed and beautiful as nature itself. Allowing the team's creativity and productivity to be constrained by the limits of their hardware is simply unacceptable."

Standardizing on hardware that's compatible with and optimized for the broad range of professional applications in use by Framestore's artists is no small undertaking. In an environment where this hardware is deployed over hundreds of workstations, logistical issues of reliability, temperature control and power consumption also become critical. Equipping Framestore's artists with the latest NVIDIA Quadro graphics cards has helped them address these challenges, as well as overcome bottlenecks and unlock workflow benefits across a variety of applications

SOLUTION

The human eye is very familiar with how faces move so capturing the subtleties of facial expressions in computer generated 3D animations is a very detailed and demanding process. Framestore's Head of Rigging Nico Scapel creates rigs, digital skeletons based on motion capture data. Rigs underlie 3D character models to make them move realistically and bring them to life.



I regularly work on models that involve millions of polygons, 16K textures and hundreds of tiles. MARI is notoriously memory hungry and, on my old system, once I got to around 20 layers of painting it would really slow down. I'd have to hide layers to make it possible to work with them. Now I can add 50 layers and there's no loss of performance. I can also use real time displacement mapping. In the past, this feature ran too slowly to be useful. Now I've gone from 1 FPS to over 20. Both rotating in the viewport and the application's responsiveness to my brush strokes are more interactive. Thanks to the K5200, I don't have to compromise any more.

Holger Wenzl
Texture Artist and Lookdev
Framestore

Using facial capture package Faceshift with Microsoft Kinect, Scapel upgraded his workstation with an NVIDIA Quadro K2200. The 40% performance improvement he experienced with the new graphics card has proved to be a game-changer. Whereas before Nico had to render facial capture sequences out and view the clips to evaluate them, now he's able to play animated assets at 29 frames per second (FPS) in Faceshift's viewport. This allows him to work with assets interactively, enabling faster and more intuitive iteration for a better result.

"24 FPS is the golden number for animation and the Quadro K2200 has put me over the top," explained Scapel. "Below that speed, it's not possible to work in real time. Achieving this level of performance has revolutionized my workflow. Instead of spending time to render a clip offline, looking at it, making changes and repeating this until it's right, I can spin the model around and manipulate it live. It's a more efficient, more creative way of working."

As a Texture Artist and Lookdev at Framestore, Holger Wenzl is responsible for texturing 3D models with color and depth, as well as getting the look of environments, objects and characters right. Working in Linux with MARI 2.6 from The Foundry, Wenzl found that he was struggling to work with complex scenes. The addition of an NVIDIA Quadro K5200, packing a massive 8GB memory capacity, to his workstation massively boosted performance in MARI, accelerating his workflow and making additional features usable.

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Nico Scapel
Head of Rigging
Framestore

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Not content with delivering revolutionary performance improvements that enable increased efficiency and new workflow models, the latest generation of NVIDIA Quadro cards have helped Framestore keep its cool. Working in Autodesk Maya with the Quadro K4200, Lead Effects Technical Director Noah Taylor was impressed by the power efficiency of the card.

"When you have fifty workstations maxed out in one room, it gets pretty warm!" Taylor said. "With the K4200 my system is running at a much lower temperature – I don't have to worry about the fan blowing out. And I can turn the air conditioning down. It may sound like a small thing but on the scale of a company like Framestore it represents significant energy and cost saving."

IMPACT

VFX artists are engaged in a creative arms race, battling to devise ever more ingenious, realistic and downright spectacular effects that will dazzle increasingly sophisticated audiences. For Framestore, its new NVIDIA Quadro graphics cards are a vital tool in staying two steps ahead.

"From increased productivity and efficiency to new workflow models and more creative freedom, the results we've achieved with these new cards are fundamental to our future," said MacPherson. "And Quadro also gives us the reassurance of knowing the graphics hardware on which our artists rely has been developed specifically for professional users with the highest standards of reliability and compatibility.

"Our clients include the world's biggest film studios, direct to brand relationships and creative partnership with the world's greatest directors," MacPherson continued. "They trust Framestore because they know we have a history of successful delivery. Key to this is our technology infrastructure and the talent base that has no boundaries in terms of realizing a creative vision. NVIDIA Quadro is an essential component helping us keep the edge we need to do that. It's our weapon of choice."



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