Cover image:
A concept design from Gadget-Bot's virtual reality experience Kaidro: The Awakening, modelled, textured and rendered in Modo

Welcome

Users of Foundry's software now have more ways than ever to harness the computing power of modern professional graphics cards.

Compositors needing to do clean-up or rig removal can make use of NukeX's Smart Vector toolset, newly GPU-accelerated in Nuke 11.2. Designers and games artists can explore their work in virtual reality, thanks to Modo 12.1's integrated VR viewport. And Radeon ProRender, due in a future release of the software, provides look dev and visualisation professionals with a fast, intuitive GPU-based renderer.

Whether you work on Windows, Linux or macOS, AMD has a GPU to meet your needs. Windows and Linux users can take advantage of the Radeon Pro WX Series of workstation graphics cards: the top-of-the-range Radeon Pro WX 9100 provides 12.29 Teraflops of peak single-precision floating-point compute performance and 16GB of high-bandwidth HBM2 memory.

Meanwhile, Mac users can harness the power of the Radeon Pro cards in new iMac and iMac Pro workstations. In this supplement, you can discover how Steelhead's 5K iMacs enable the LA post house to turn around ads in hours, not days – while external GPU breakaway boxes containing cards like the WX 9100 could help squeeze new life out of its older hardware. To find out more, read on.

Rob Jamieson
ISV Manager, AMD

Modo 12.1: designing in virtual reality

Supported by AMD's VR-ready GPUs, Modo 12.1's virtual reality viewport gives 3D artists a new way to experience their work

Some DCC tools let you export assets to VR engines. Modo actually lets you work in VR. Modo 12.1, released in June, adds an integrated virtual reality viewport to Foundry's modelling, rendering and animation software, enabling artists to interact with their work in an entirely new way.

Wearing an Oculus Rift or HTC Vive headset, Modo users can view models at actual scale, or adjust them directly in virtual reality, moving, scaling, rotating, instancing or duplicating objects. It's also possible to place view cameras within a scene, accelerating the design discovery process.

"VR is absolutely fantastic for blocking anything: the initial shape of a model, or the layout of an environment," enthuses Foundry Senior Product Manager Shane Griffith. "You get such an immediate sense of perspective, and the relationships of the sizes of things."

The new viewport makes Modo unique among DCC applications in that it enables artists to work directly in virtual reality, rather than having to export assets to a game engine in order to view them.

"If you have to translate the data, there's always a loss of time, artistic flow, and fidelity," points out Griffith. "If you let an artist view an asset in the environment in which they're creating it, the more performant they can be."

But powerful tools demand powerful hardware – and in the case of the VR viewport, that means a modern graphics card. "Even chips that are just a year or two old are struggling to keep pace with us," says Griffith. "Generally, graphics memory is more important to GPU compute like final frame rendering, but for VR, memory bandwidth and GPU processing bandwidth are the bigger limits. You need a steady, fluid frame rate across both viewports, or you have issues of disorientation."

Workstation cards like AMD's Radeon Pro WX Series fit the bill perfectly. With its 16GB of high-bandwidth HBM2 memory and 12.29 Teraflops of peak single-precision floating-point compute performance, a card like the Radeon Pro WX 9100 ensures that Modo's VR viewport displays seamlessly on Windows or Linux, while Mac users can make use of the Radeon Pro chips integrated into current iMacs or the iMac Pro.

The VR viewport is just one of the new features in Modo 12.1 to make use of the computational power of the GPU. The software's Advanced Viewport, having gained support for GPU-based anisotropic texture filtering in Modo 12.0, now gets support for Group Masks, making it possible to preview complex, layer-based materials accurately and make adjustments in real time, without having to render out the scene.

But for Griffith, nothing comes close to the impact of seeing something that you have just modelled at the size at which it would exist in the real world.

"I've been around this industry for 25 years. I can relate to doing 3D on a computer screen," he says. "But putting on the VR headset was like starting all over again. It was like moving from pen and paper to 3D."

Modo 12.1 Features at a glance
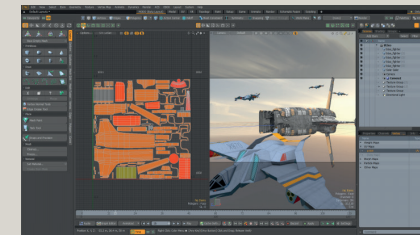
Integrated VR viewport
Modo 12.1's integrated VR viewport lets artists view models in virtual reality, using an HTC Vive or Oculus Rift headset. Users can even lay out scenes in VR, moving, transforming, instancing and duplicating assets, with support for object snapping.
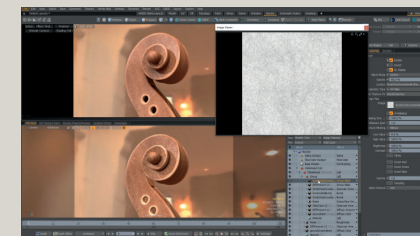

Display complex materials in the Advanced Viewport
With support for Group Masks, group blending modes and opacity, the Advanced Viewport displays layered materials more accurately, enabling artists to preview and edit complex material set-ups in real time.
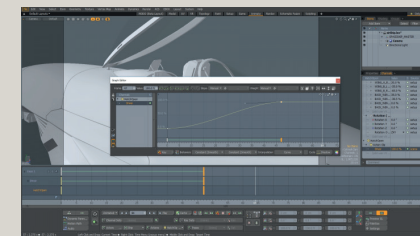

New animation features
Modo 12.1 speeds up the keyframing process. Driven Actions enable users to retime and rig action clips in a scene, while the new default Smooth Flat key slope type creates smoother interpolation between keys, cutting the need for manual adjustment.
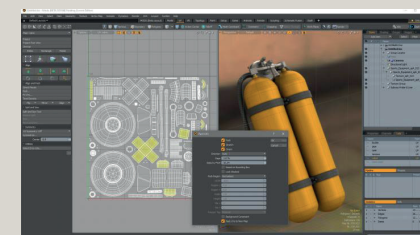

More efficient UV packing
The new UV Pack algorithm in Modo 12.1 generates faster, more efficient, more user-controllable UV packing. UVs can also now be packed to separate UDIM islands according to polygon tag types: by material, part, smoothing group or selection set.
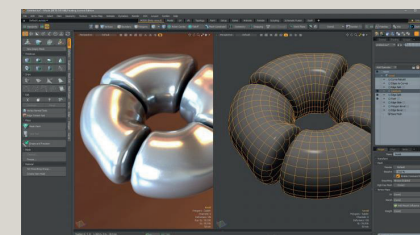
Improved modelling tools
Modo's direct modelling, procedural modelling and MeshFusion toolsets have all been updated in 12.1, with improvements to the Vertex Normal Toolkit and a new Smoothing Group Manager making it easier to control how surfaces are smoothed.
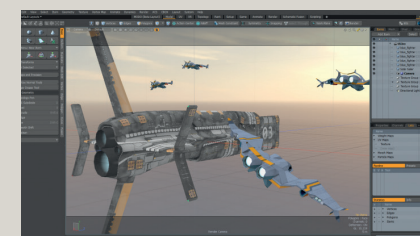
Updated user interface
Multiple tweaks to Modo's interface speed up common tasks, while a new KITS button at the top right of the UI gives access to add-on kits. Users can also preview new UI concepts for working within a single layout via the optional Beta layout.

Radeon ProRender

Due this year, the Modo edition of AMD's GPU-based renderer is a fast, intuitive tool for look development and product visualisation

Anticipated to be released later this year, one of the most exciting upcoming features in Modo is Radeon ProRender: the new native version of AMD's GPU-based render engine.

A fast, physically accurate renderer, Radeon ProRender generates highly realistic images without the need to adjust a large number of settings, and being based on open standards, it can run on any GPU that supports OpenCL 1.2, on Windows, Linux and macOS.

The Modo edition supports all of Modo's standard lights, materials and cameras, and can generate a wide range of render outputs – including AO, shading normals and world position – making it ideal for both look development and final-quality stills.

"From a Modo user's point of view, I think it has the potential to be a bit of a game-changer," says freelance artist Mike Griggs, who has been testing the software in beta. "As a simple point-and-shoot renderer, it's going to be great for tasks like packaging design."

Griggs, whose own work ranges from motion graphics to animated window displays for Selfridges, praises the ease with which scenes can be configured for rendering, and the predictability of ProRender's output.

On his architectural interior scene, available at **www.creativebloke.com**, you can see how noise-free an image generated in Radeon ProRender is compared to one run on Modo's CPU renderer for the same length of time.

"A lot of 3D artists just want to stick on a render without having to worry about blotchiness," Griggs points out. "With ProRender, the application is getting in the way less. It lets you iterate on your design, not the maths."

Gadget-Bot

For projects like our cover image, the LA-based production studio has pioneered a VR concept design workflow with Modo at its core

Gadget-Bot doesn't just design for VR: it designs in VR. On projects like virtual reality experience Kaidro: The Awakening, recently shown at E3 and VRLA, the LA-based production studio has pioneered an innovative kitbashing workflow using Modo and VR design tool Gravity Sketch.

Founded in 2011 by Robert Simons and Peggy Chung, Gadget-Bot's portfolio ranges from concept design for high-profile external projects like Jurassic World, Westworld and Call of Duty: Black Ops 4 to its own short films and games, with Modo at the core of its production pipeline.

"We've been using Modo for about 10 years," says Robert Simons. "I use it on all the films and videogames as a kind of concept model engine. I build out models and render them directly in Modo, then kick them out to Photoshop to do final paintovers."

For Kaidro's mechs, Simons developed a VR-based workflow, creating base assets in Modo, then assembling them in Gravity Sketch.

"It meant I could pose them without having to rig them," he explains. "Once I had everything posed, I brought it all back into Modo, rendered a 360° panoramic view, then painted it up in Photoshop. When you put it into a VR headset, you're standing inside a concept art piece."

Simons is now looking forward to testing the new VR viewport in Modo 12.1. "Sometimes I'll export a model into Unreal Engine without having seen it in virtual reality, and it looks kind of weird," he says. "But when I get to create it in VR, and put it into the game engine in VR, it's one-to-one. There's no guessing any more."

NUKE® 11.2

Nuke 11.2 and AMD: a winning combination

AMD's powerful Radeon Pro cards help the new GPU-accelerated features in Nuke perform faster – on Windows, Linux or macOS

When you work in a fast-moving industry, every minute counts. Which is why Nuke 11.2 introduces new workflows to help artists working on complex compositing and editorial projects hit tight deadlines.

Changes to the UI streamline common tasks like finding nodes within a script. Deep compositing is now 1.5 times faster. The updated Smart Vector toolset in sister editions NukeX and Nuke Studio makes plate clean-up quicker and easier. And demanding tasks can benefit from the power of modern workstation GPUs – no matter whether you're working on Windows, Linux or macOS.

"Having both nodes in the Smart Vector toolset running on the GPU is a massive update," says Foundry Senior Commercial Product Manager

Christy Anzelmo. "It opens up entirely new workflows."

One of the most game-changing features added to Nuke in recent years, smart vectors enable artists to carry out paint work on one frame of a sequence, then use motion vector data to propagate the changes to the remaining frames, speeding up anything from clean-up and rig removal to digital make-up effects.

"Before, you had to pre-render the vectors, either locally or by sending the job off to the render farm," says Anzelmo. "Thanks to GPU support, you can preview them in near-real time. It's a much more intuitive way to work, and you can get better results faster."

Smart vectors aren't the only key toolset in Nuke 11.2 to benefit from GPU acceleration. Thanks to Foundry's support for OpenCL, the leading open framework for GPU computing, critical tasks like denoising, retiming, blurring and defocusing footage can take advantage of professional graphics cards, without being tied to a single manufacturer's hardware.

The list of GPUs supported for use with Nuke on Windows and Linux now includes the Radeon Pro WX 9100, AMD's flagship workstation card. With its 12.29 Teraflops of peak single-precision floating-point compute performance and 16GB of high-bandwidth HBM2 memory, the WX 9100 powers through complex VFX shots, performing 20% faster in Foundry's internal tests than the most powerful AMD card previously supported, the Radeon Pro WX 7100.

Mac-based facilities can also benefit from using AMD hardware, thanks to Nuke 11.2's support for the Radeon Pro Vega GPUs integrated into the new iMac Pro. By being able to make use of the system's graphics card rather than its CPU alone, key Nuke nodes like Kronos and MotionBlur now run on average 500% faster than before.

Even mobile workstations can make use of AMD desktop cards, via external chassis like Sonnet's eGFX breakaway boxes. They support Radeon Pro WX Series GPUs, including the WX 9100, and plug into a Thunderbolt 3 port, augmenting a laptop's internal GPU.

"During our initial tests of the Sonnet eGPU box, we've seen promising results with the MacBook Pro," says Anzelmo. "It allows for more compute-heavy GPU-accelerated effects to be done on mobile hardware."

## Nuke 11.2 Features at a glance

Support for AMD GPUs
Thanks to Foundry's support for OpenCL, GPU-accelerated features in Nuke take advantage of supported AMD graphics cards – now including the Radeon Pro WX 9100 on Linux and Windows, and the integrated Radeon Pro Vega GPUs in iMac Pros.
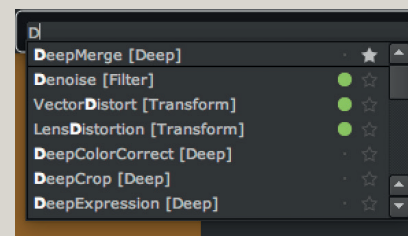
Streamlined interface
Changes to the UI in Nuke 11.2 speed up common tasks. Improvements to the Tab menu make it faster to find or add nodes in a script, while being able to drag parameters between nodes cuts the time taken to add user knobs to Live Groups or gizmos.
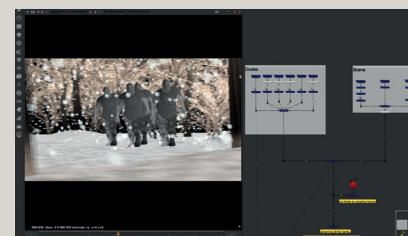
Faster deep compositing
Nuke 11.2 introduces a new API for deep compositing which manages memory more efficiently. In Foundry's internal tests, processing was 1.5 times faster than previous releases, with more improvement possible on larger scripts.
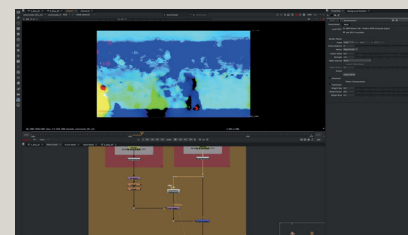
GPU-accelerated Smart Vector toolset
Both NukeX's SmartVector and VectorDistort nodes are now optimised for the GPU, making it possible to generate motion vectors on the fly, while a new mask input cuts the need for manual clean-up.
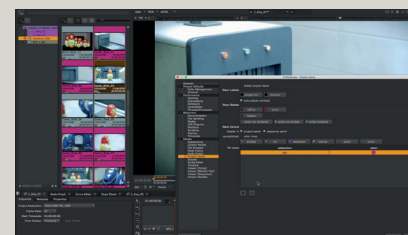
Improved Nuke Studio project panel
Multiple improvements to Nuke Studio's Project panel make it easier to manage multiple projects, including new sort and search options, and the ability to colour-code clips in the project bin.
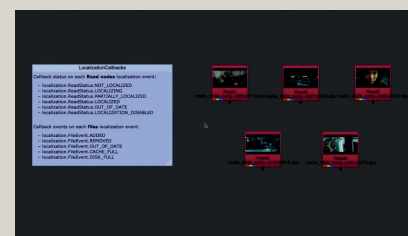
Better file localisation
Building on the major updates to file localisation in the previous release, Nuke Studio 11.2 offers even more control over localised files, with new Python callbacks to identify local files that have become out of date compared to the network versions.
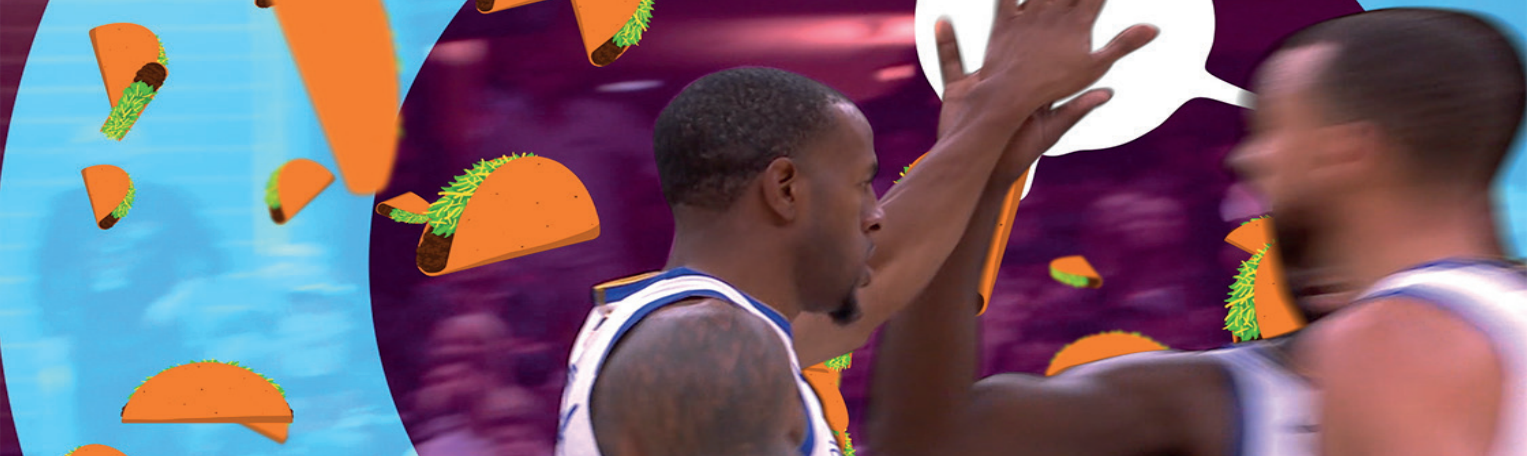
Main image and above: Stills from Taco Bell's 'Steal a Game, Steal a Taco' campaign. Nuke's 3D toolset enables Steelhead to turn around each spot in hours

Left: Steelhead's LA facility. The studio is almost entirely Mac-based, running a mix of iMacs and iMac Pros, with AMD Radeon Pro GPUs

"I COULDN'T IMAGINE NOT USING NUKE FOR MOST OF THE JOBS WE DO"

Steelhead

Nuke's 3D toolset and AMD GPUs help the US post facility meet the tight turnaround times of its high-profile commercial jobs

Few studios appreciate the speed at which Nuke tackles complex compositing jobs more than Steelhead. Over the past four years, the facility – previously a department of top US ad agency Deutsch – has shipped hundreds of commercials, web and broadcast projects, with turnaround times ranging from weeks to just hours.

"I couldn't imagine not using Nuke for most of the jobs we do," says Emmy Award-winning compositor Austin Meyers, who was brought in to build up Steelhead's fledgling VFX team in 2015. "It lets us take what would be a five-day shot and shorten it down to a day and a half."

Steelhead's reel ranges from ads for Nintendo and Volkswagen to projects for HBO and effects-heavy web series like Rooster Teeth's Crunch Time. But one of its highest-pressure jobs is Taco Bell's 'Steal a Game, Steal a Taco' campaign, which offers basketball fans a free Doritos® Locos Taco when the road team 'steals' a win from the home team during the NBA Finals.

"We have about 16 hours [for each spot]," says Meyers. "The game ends, we get the footage from the NBA, the editors cut it overnight, my guys come in at four in the morning, and it ships by four in the afternoon that day."

In that time, Steelhead has to blur out everything not licensed to appear in the spot, including the crowd, the match officials, billboards and signs – and even the logo on the ball itself. To stabilise the footage, which uses rapid camera pans and zooms, the studio relies on Nuke's 3D toolset.

"We can just do one frame of clean-up, run it back through the 3D system, and the shot is effectively done," says Meyers. "Doing it the old way, somebody would be grinding on it for days, but with a 3D workflow, we can do it in a matter of hours."

As well as Nuke, NukeX and Nuke Studio, Steelhead uses a range of software in production, including Premiere Pro for editing, After Effects and Cinema 4D for motion graphics, and Maya, Blender and Houdini for 3D. Its artists' workstations are all Macs: both new 5K iMacs and older Mac Pros.

As a Mac shop, Foundry's support for OpenCL is critical to Steelhead, enabling any GPU-accelerated feature inside Nuke to harness the power of the AMD Radeon Pro cards inside its iMac workstations.

"Being able to leverage the GPU is huge," says Meyers. "For years, you'd turn off effects like ZDefocus and VectorBlur while you were doing your work. [GPU support] lets you see it how you're supposed to see it."

Meyers himself uses a MacBook Pro, with which he is currently trialling an AMD Radeon Pro WX 9100 GPU running in an external breakaway box. He is now seeing a 30-40% performance improvement in Nuke over the laptop's internal card: a figure that he predicts will rise to around 150% once the set-up is fully optimised.

Steelhead hopes that such a workflow will provide a cost-effective way to update older hardware.

"Because we're a Mac fleet, we're fairly limited in terms of how we can upgrade," says Meyers. "If we could buy GPU enclosures and float them from workstation to workstation, we could get markedly better performance out of stuff we already own."

But for Meyers, the main benefit of using an external GPU is simply raw speed. "It will just make me faster, which is all I want," he laughs. "As a compositor, GPUs have always been near and dear to me, because when you're working in 3D space, they make more difference than anything else."