GROUNDBREAKING PRODUCTIVITY WITH NVIDIA QUADRO

In construction circles, "ground breaking" marks the official beginning of a project. But in reality, an enormous amount of work takes place well before the first shovel hits the dirt.

That foundational phase is where civil engineering and land planning skills are required to provide management, surveying, engineering and landscape architecture services. While development projects can vary widely in size and scope, they all share a similar challenge: to move from initial plans through construction as quickly and efficiently as possible, or face considerable financial penalties.

Cole & Associates, based in St. Louis, has been successfully navigating the tricky realm of civil engineering and land planning since 1991. Cole's work encompasses major projects in residential, commercial and municipal markets. At this scale, making changes while projects are under way can trigger significant levels of unbudgeted time and costs.

By embracing the latest tools for high-end 3D design and visualization – notably Autodesk's AutoCAD Civil 3D software running on NVIDIA Quadro graphics processing units (GPUs)- Cole & Associates has realized productivity gains in excess of 40 percent. This hardware software combination keeps its projects moving forward in the fastest, most efficient path possible.

By leveraging the strengths of Quadro GPUs and AutoCAD, Cole has also seen 25 percent productivity gains.

Embracing Technology

"A primary goal at Cole is to be very savvy when it comes to technology. By investing in the best products available, we save our clients both time and money," said Mark Mosby, CAD manager and a civil designer for Cole. "Our CAD department is armed with sophisticated technology including NVIDIA Quadro GPUs and AutoCAD software, used to produce visualizations with great accuracy and amazing visual quality. AutoCAD and Quadro run perfectly together, giving us the integrated performance we count on every day."

Employing high-end 3D design, virtual construction and photorealistic visualization, all driven by the NVIDIA Quadro professional graphics solutions, Cole accelerates its projects so clients get the results they need, more quickly and less expensively. Adopting these technologies sharpens Cole's competitive edge and has led to hundreds of prestigious projects, numerous awards for outstanding design, and a loyal customer base that includes large municipalities and private land developers.

NVIDIA Quadro Boosts Productivity, Saves Time & Money

With a recent upgrade to Windows 7 64-bit, Cole replaced other vendor's graphics cards with the more powerful NVIDIA Quadro. Allowing for easier 3D visualization, Cole can now show changes to a model instantaneously, so clients and other project stakeholders can visualize all the implications – and Cole's staff can make necessary adjustments while the project is still in the design stage.

"After substantial research, we determined the NVIDIA Quadro boards delivered higher quality graphics and would give us the peak performance we demand," said Mosby. "Since deploying the new Quadro-based solutions, we have seen a staggering 40 percent productivity gain when creating topographic surveys."

The performance of NVIDIA Quadro graphics enables Cole to achieve real-time rendering, cut down on precious man hours and save project dollars.

During the design and development of a large apartment complex, Cole was able to appreciate these significant improvements using Quadro when running AutoCAD Civil 3D. "By quickly providing photorealistic visuals of the proposed development and the heights of new buildings relative to existing structures, we were able to alleviate citizens' concerns and quickly move forward with the project – thus saving the stakeholders' valuable time while gaining important support for the project's outcome," said Mosby.

By leveraging the strengths of Quadro GPUs and AutoCAD, Cole has also seen 25 percent productivity gains in its large roadway projects. Cole's engineers work simultaneously through several design options to identify problems and likely impacts for various scenarios. Additionally, intricate road plans which in the past required several days are now completed in a matter of hours or even minutes.

"The speed at which we can simulate real-world scenarios directly affects our bottom line," said Mosby. Cole is able to conduct powerful simulations to show realistically what the roads will look like and predict how they will hold up over time. Cole has the ability to experiment with design changes without sacrificing the project schedule and expects to realize additional savings as it explores the dynamic grading and intersection design capabilities of AutoCAD Civil 3D, all accelerated by NVIDIA.

Using Real-Time Visualizations to Better Serve Clients

"It's important for us to provide every client with the best service possible, hence we rely on technologies from NVIDIA and Autodesk to help us deliver on that promise," said Mosby. "From creating simple 3D models and terrain modeling, to building complex visualizations and simulations of large-scale projects, we count on Quadro technology to deliver fast, reliable graphics performance, every time."

The performance of NVIDIA Quadro graphics enables Cole to achieve real-time rendering, cut down on precious man hours and save project dollars. In addition, Cole can easily incorporate architects' Building Information Modeling (BIM) information. BIM is the process of generating and managing building data during the design and construction lifecycle using 3D, 4D and real-time modeling, to increase productivity and improve building geometry, spatial relationships, geographic information, and quantities and properties of building components.

Based on the success it has enjoyed leveraging the range of NVIDIA Quadro to accelerate - AutoCAD tools from Autodesk, Cole looks forward to its future.

"To stay ahead of the competition, we embrace the best new technologies so we can give our clients the most effective and highest quality results possible," said Mosby. "NVIDIA Quadro products allow us to continually grow our capabilities and easily incorporate next-generation software applications into our workflow."

To learn more about NVIDIA Quadro, go to **www.nvidia.com/quadro**