Dell Pro Max: Proven performance across demanding design, engineering, creative, and power user apps

In our testing across multiple workloads, new Dell Pro Max laptops demonstrated clear advantages over previous-gen models

Design, engineering, creative, and power user workflows may be pushing mobile workstations harder than ever before, with complex geometry, high-fidelity renders, simulation, grading, compilation, and collaboration competing for compute. Older devices might let you get by, but upgrading to newer systems with stronger resources can speed iterations, review timing, and delivery windows.

To measure these differences in practice, we tested several latest-generation Dell™ Pro Max laptops against comparable previous-generation Dell Precision™ mobile workstations in CAD, simulation, and creative production workflows. We also compared configurations of Dell Pro Max laptops against Dell Pro laptops in a power user workflow. We relied on real application tasks to quantify how quickly users can complete discrete steps within common workflows. As we present our results, we discuss what the time savings could mean when mapped to real review cycles, production deadlines, and development iteration loops. The time you save in individual tasks accumulates, which can benefit users, their teams, and your entire organization.

Faster applications for modern workflows

Faster insight generation

Up to 50% less time for risk calculations

Accelerated simulation solving

Up to 37% less time completing Ansys® Fluent simulations

Quicker creative output

Up to 49% less time generating proxies in Adobe® Premiere®

More coding, less waiting

Up to 2 hours saved on large-scale C++ builds

What and how we tested

Dell Pro Max 16	Dell Pro Max 16 Plus	Dell Pro Max 16 Premium	Dell Pro Max 14
Design workflow	Engineer workflow	Creative workflow	Power user workflow

Dell Pro Max laptops vs. previous-generation Dell mobile workstations

To understand the performance improvements you might see with Dell Pro Max laptops, we compared the application performance of three 16-inch Dell Pro Max laptops to three equivalent previous-gen Dell Precision mobile workstations. For each pair of devices, we chose three applications to represent a compute-demanding professional workflow. For each application, we executed multiple representative tasks (e.g., design renders, file imports, and risk calculations), and we report median times.

- **Dell Pro Max 16 vs. Dell Precision 3591**: Our design workflow included the computer-aided design (CAD) applications SOLIDWORKS® and AutoCAD®, and Oracle Crystal Ball for financial modeling and projections.

- **Dell Pro Max 16 Plus vs. Dell Precision 7680**: Our engineering workflow focused on simulating and modeling and included CATIA, SOLIDWORKS, and Ansys Fluent.

- **Dell Pro Max 16 Premium vs. Dell Precision 5690**: Our creative workflow included video production tasks in Adobe Premiere Pro, Maxon ZBrush, and DaVinci Resolve Studio.

Dell Pro Max laptops with integrated graphics vs. standard Dell Pro laptops

We then compared two configurations of a Dell Pro Max 14 laptop to two configurations of a Dell Pro 14 Plus laptop. The goal of comparing the Dell Pro Max 14 configurations to the Dell Pro 14 Plus configurations was to show how power user workflows that do not need a discrete GPU can benefit from the additional resource capabilities of a mobile workstation (e.g., more memory, more wattage to the processor, and better handling of multi-threaded workloads).

These results can help you identify which Dell Pro Max configuration better aligns with different professional roles and work patterns in your organization.

Dell Pro Max 16

Dell Pro Max 16 Plus

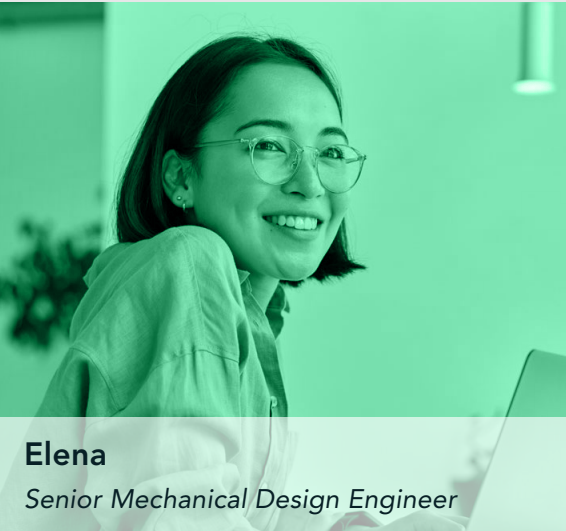**Dell Pro Max 16 Premium**

Dell Pro Max 14

About Dell Pro Max laptops

Dell Pro Max laptops offer professionals sustained, higher-end performance in a business-ready platform. These PCs pair modern Intel® Core™ Ultra processors or AMD Ryzen™ AI PRO CPUs with integrated Intel Arc™ or AMD Radeon™ graphics. Select models also offer NVIDIA RTX™ Pro discrete GPUs for accelerated compute and visualization for AI-assisted workloads.

Dell Pro Max laptops can handle intensive, real-world work—from large spreadsheets and financial modeling to AI-assisted media tasks and development environments—by supporting high storage and memory capacities, enabling fast local data access and responsive multitasking across many enterprise applications.

For distributed IT organizations, Dell Pro Max laptops include integrated features that help maintain performance over time: modern thermal design for long sustained loads, optional Intel vPro® platform for remote fleet management and threat monitoring, and enterprise-grade BIOS and firmware protections to support long-term resilience. Dell Pro Max laptops also offer ENERGY STAR®-qualified configurations, support for Windows 11 Pro and Microsoft Copilot and AI-capable NPUs on select processors.

Dell Pro Max laptops can deliver speed, responsiveness, and manageability to organizations as performance-oriented business platforms. Explore Dell Pro Max laptops.

Faster design-to-approval workflow with Dell Pro Max

Elena is accountable for releasing downstream designs that can withstand engineering scrutiny and financial review. She iterates 3D models in SOLIDWORKS, exchanges mechanical drawings and layouts in AutoCAD with her cross-functional counterparts, and runs Oracle Crystal Ball to quantify cost and lead-time risk before gate approvals. High-fidelity visualization and rendering steps are common in her review cycles as well. If any of these steps are too slow, she could enter reviews with partial evidence, which almost guarantees re-work and additional time-consuming decision-making steps.

Elena
Senior Mechanical Design Engineer

What faster performance could unlock for Elena:

- One-pass approvals — She could have complete evidence ready for the review window.
- Avoiding re-work — Stakeholders can review the most recent version.
- Preserving the schedule — Running models faster could prevent week-scale resets.

What we found

Designing with CAD and running financial analysis on designs

Product engineering workflows can rely on review loops measured in minutes. To quantify how laptop resources could impact those windows, we timed tasks in SOLIDWORKS, AutoCAD, and Oracle Crystal Ball. The tasks in this workload could be part of a real design-to-approval sequence: 3D modeling and rebuilds, assessment of component assemblies, and probabilistic risk simulations.

Our testing showed how much less time the Dell Pro Max 16 needed to complete compute-heavy critical tasks for a review-ready state compared to the previous-gen Dell Precision 3591 device. For Engineers and others working against fixed review gates (such as the fictional Mechanical Designer Elena, who must deliver fully validated designs before approval deadlines), faster task completion can make the difference between finalizing work inside the gate or having to push it to the next cycle.

SOLIDWORKS

CAD and engineering professionals use SOLIDWORKS to manage, track, and convert ideas into products as well as construct virtual test environments that replicate real-world behavior. We chose four common SOLIDWORKS tasks to demonstrate how the Dell Pro Max 16 offers faster performance for this work compared to the previous-gen Precision mobile workstation:

- **Visualize/render assembly:** Created realistic renders of a SOLIDWORKS assembly
- **Calculate mass/high accuracy:** Determined physical properties of a part or assembly
- **Calculate interference:** Identified if components in an assembly occupy the same space, which is important for ensuring all parts fit together correctly before manufacturing
- **Import IGES/engine:** Imported a universal CAD format (Initial Graphics Exchange Specification, or IGES) document of an engine assembly into SOLIDWORKS

Note that not all tasks may apply to our fictional user scenarios, but in addition to indicating better performance, the time savings could apply to users in similar roles.

Across the four SOLIDWORKS tasks, the Dell Pro Max 16 with NVIDIA RTX PRO 2000 Blackwell GPU completed the work faster, as shown in the per-task results in Figure 1. Depending on the frequency of performing the tasks, the time savings from these tasks could add up in a workday or across a work week. Task frequency varies by position and stage of development: for example, some users might calculate mass or render an image more frequently but they might calculate interference only occasionally.

SOLIDWORKS

Time to complete tasks (MM:SS)   *Less time is better*

Visualize/render assembly
Dell Pro Max 16: 4:09
Dell Precision 3591: 5:12

Calculate mass/high accuracy
Dell Pro Max 16: 0:19
Dell Precision 3591: 0:26

Calculate interference
Dell Pro Max 16: 0:10
Dell Precision 3591: 0:13

Import IGES/engine
Dell Pro Max 16: 1:07
Dell Precision 3591: 1:34

■ Dell Pro Max 16 with NVIDIA RTX PRO 2000 Blackwell Generation GPU
■ Dell Precision 3591 with NVIDIA RTX 2000 Ada Generation GPU

28% less time
Importing a file

Users can perform these tasks often, and across a workday, the time saved could accumulate into meaningful productivity. For example, in Elena's workflow, faster model preparation tasks could help ensure she enters a review with finalized models using the highest accuracy possible.
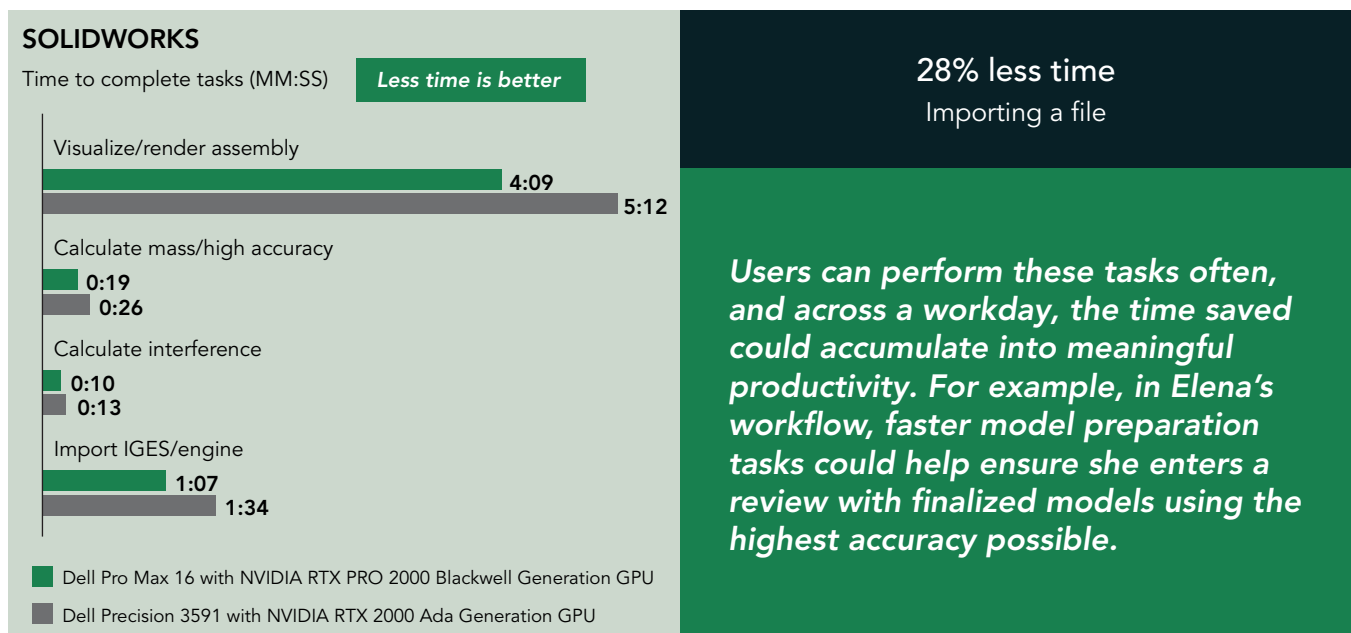
Figure 1: Time to complete four individual tasks in SOLIDWORKS. Source: PT.

AutoCAD

Design and drafting professionals rely on AutoCAD to produce detailed 2D and 3D drawings, technical schematics, and layout plans that guide manufacturing and construction processes. We tested the following tasks:

- **Render kitchen scene:** Generated a photo-realistic image of a 3D kitchen model
- **Orthographic section plane:** Created a cross-sectional view of an existing 3D model
- **Place assembly:** Inserted a component or subassembly into a larger assembly file and defined its position and movement relative to other components
- **Import IGES/cylinder head assembly:** Imported a 3D model file (a cylinder head assembly) into an AutoCAD drawing for viewing, modification, or use in a larger design

The Dell Pro Max 16 with NVIDIA RTX PRO 2000 Blackwell GPU completed the AutoCAD tasks faster than the competing Precision model, as shown in Figure 2. As with SOLIDWORKS, the updated hardware configuration (with newer CPU and GPU, faster memory speeds, and enhanced system thermals) helped speed the Dell Pro Max 16 system. Again, depending on the frequency of these tasks, the time savings could accumulate and free parts of a user's work day or week for other tasks.

AutoCAD

Time to complete tasks (MM:SS)   *Less time is better*

Render kitchen scene
21:00
28:21

Orthographic section plane
0:37
0:49

Place assembly
0:26
0:39

Import IGES/cylinder head assembly
0:37
0:50

■ Dell Pro Max 16 with NVIDIA RTX PRO 2000 Blackwell Generation GPU
■ Dell Precision 3591 with NVIDIA RTX 2000 Ada Generation GPU

33% less time
Inserting a visual element into a larger file

Single-task time savings can add up across a day, especially if models move between multiple teams or functions. In Elena's workflow, faster AutoCAD model preparation tasks could help her publish updated drawings sooner, reducing the possibility that downstream teams are working from an outdated version.
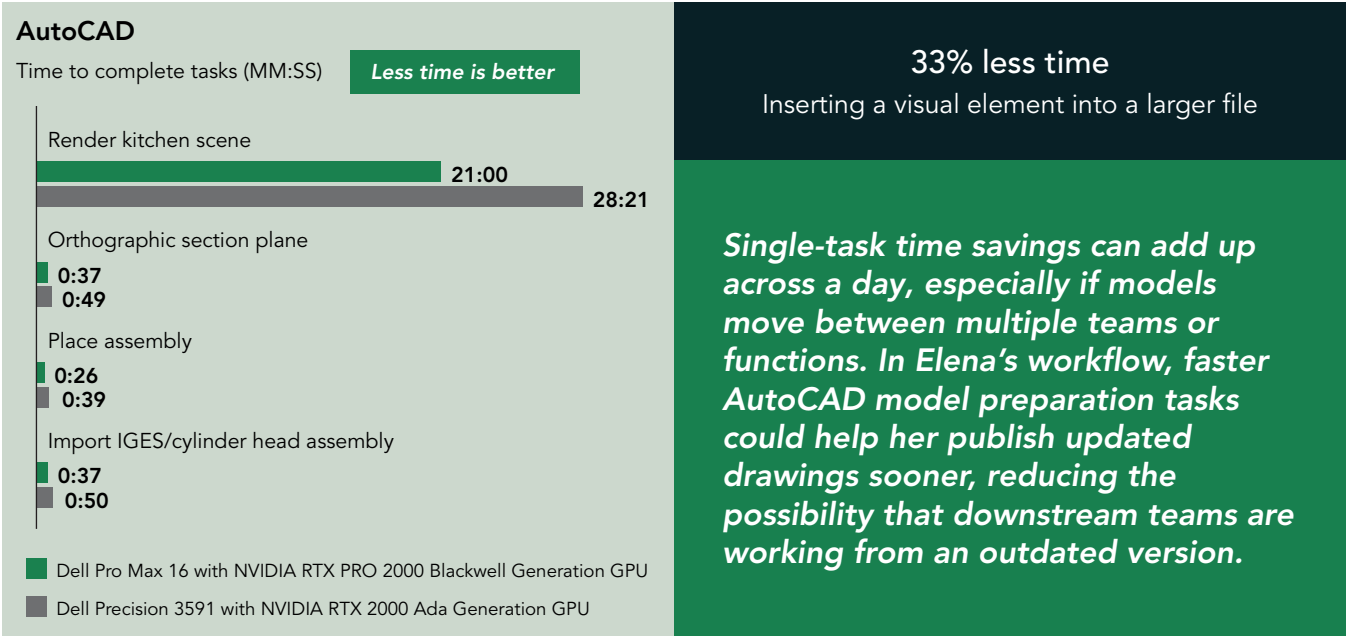
Figure 2: Time to complete four individual tasks in AutoCAD. Source: PT.

Oracle Crystal Ball

Oracle Crystal Ball is a spreadsheet-based application for risk analysis, Monte Carlo simulation, and financial optimization that runs as an add-in for Microsoft Excel. According to Oracle, Crystal Ball provides "unparalleled insight into the critical factors affecting risk" and can help users "make the right tactical decisions to reach… objectives and gain a competitive edge—even in an uncertain market."[1]

We timed how long the two Dell devices needed to complete five models in Oracle Crystal Ball:

- **Workforce with queuing (optimization):** Models the tradeoff between staffing costs and customer wait times in service environments

- **Multi-zone reserves (correlation):** Forecasts oil well production for multiple zones while accounting for uncertainty and dependencies

- **Inventory system (optimization):** Replicates a continuous review-and-reorder policy for on-hand inventory, accounting for lead-time of unreceived orders

- **Sales projection (trend chart):** Simulates three years of sales and creates a trend chart for analyzing relationships of forecasts

- **Portfolio allocation revisited (optimization)**: Optimizes a financial portfolio considering risks and other variables

Note that not all models apply to our fictional user scenario, but the time savings could apply to other professionals in financial planning, consumer goods, energy, and human resources positions.

The Dell Pro Max 16 system completed the Oracle Crystal Ball models faster than the previous-gen system (see Figure 3). For these demanding computations, modeling, and simulations, upgrading to the more powerful resources of the Dell Pro Max 16 system provides a performance boost vs. the Precision system.
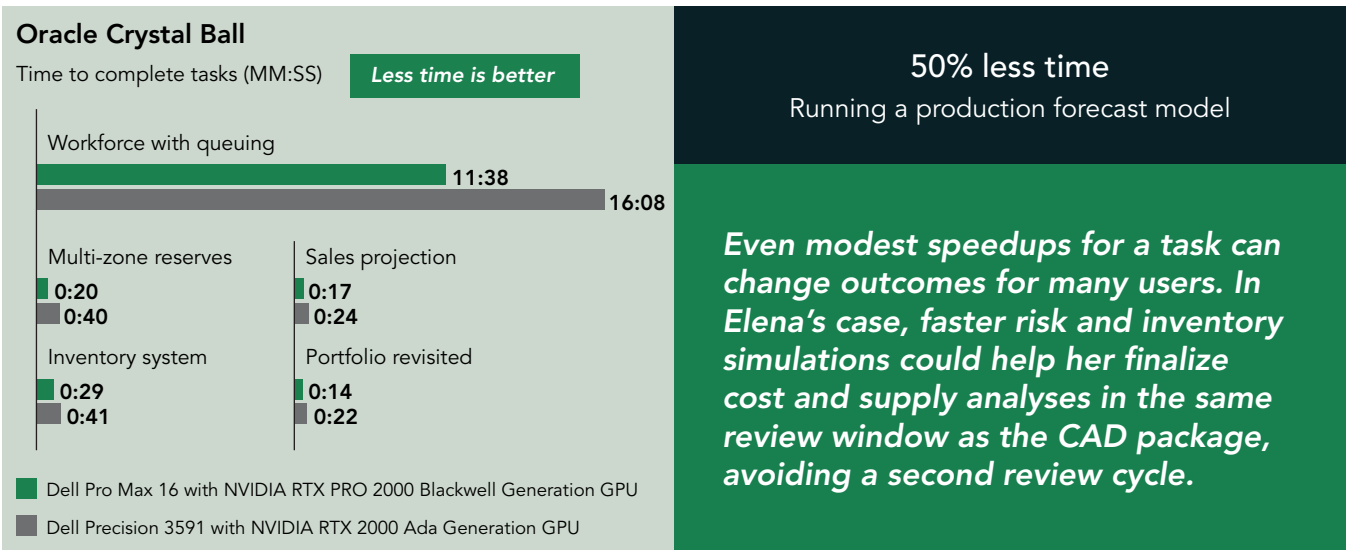

Oracle Crystal Ball
Time to complete tasks (MM:SS)   **Less time is better**

Workforce with queuing
11:38
16:08

Multi-zone reserves
0:20
0:40

Sales projection
0:17
0:24

Inventory system
0:29
0:41

Portfolio revisited
0:14
0:22

■ Dell Pro Max 16 with NVIDIA RTX PRO 2000 Blackwell Generation GPU
■ Dell Precision 3591 with NVIDIA RTX 2000 Ada Generation GPU

50% less time
Running a production forecast model

Even modest speedups for a task can change outcomes for many users. In Elena's case, faster risk and inventory simulations could help her finalize cost and supply analyses in the same review window as the CAD package, avoiding a second review cycle.

Figure 3: Time to complete five models in Oracle Crystal Ball. Source: PT.

Key takeaways for the Dell Pro Max 16 vs. Dell Precision 3591 comparison:

- Up to 28% less time designing in SOLIDWORKS

- Up to 33% less time designing in AutoCAD

- Up to 50% less time simulating financial situations in Oracle Crystal Ball

Speedier regulated review workflow with Dell Pro Max Plus

Alex works on virtual validation for modern automotive components, from chassis geometry to powertrain assemblies and more. His workflow blends 3D modeling in CATIA and SOLIDWORKS with physics-based analysis in Ansys Fluent to identify issues before they appear in physical test. Faster simulation setups and model preparation can help keep iterations moving forward within the development window, potentially reducing the risk of delayed subsystem approvals or missed integration checkpoints.

Alex

Senior Automotive Simulation and Structural Engineer

What faster performance could unlock for him:

- More iteration cycles — Less time preparing assemblies before simulation runs.
- Fewer slowdowns at integration checkpoints — Downstream teams can have simulation evidence sooner.
- More predictability in subsystem validation — Helps maintain momentum toward vehicle build milestones.

Modeling and simulating with CAD

Modeling and structural simulation workflows are often governed by subsystem readiness targets and integration checkpoints. To understand how laptop hardware resources could impact such CAD-heavy workflows, we timed tasks in CATIA, SOLIDWORKS, and Fluent on a Dell Pro Max 16 Plus laptop and a previous-gen Dell Precision 7680 laptop. These tasks could be part of an automotive pre-integration sequence: upstream geometry modeling, iterative part refinement, and preparing assemblies for physics-based structural analysis.

In our testing, the Dell Pro Max Plus system needed less time to complete compute-heavy modeling and simulation tasks compared to the previous-generation device. For Engineers working under build milestones (such as our fictional Engineer, Alex), shorter task times could reduce delays between modeling and evaluation steps, making it easier to keep subsystem validation on schedule and avoid slipping into later iteration cycles.

CATIA

CATIA is an application suite that brings together 3D modeling, simulation, collaboration, and data management tools in a unified environment to support the full product lifecycle.[2] We performed two tasks in CATIA: rendering an engine model (Figure 4) and importing a file (Figure 5).

As Figure 4 shows, the Dell Pro Max 16 Plus rendered more ray samples per second than the previous-generation Dell. CATIA uses the samples to calculate lighting and more, so more samples means a smoother and less noisy final image. The newer-generation architecture GPU of the Dell Pro Max 16 Plus processed the render task more efficiently.

CATIA

Rendering an engine model (GPU)   **Higher is better**

Total samples
109,601
94,922

Samples/second
30.44
26.37

■ Dell Pro Max 16 Plus with NVIDIA RTX PRO 5000 Blackwell Generation GPU
■ Dell Precision 7680 with NVIDIA RTX 5000 Ada Generation GPU

15% more
Samples per second

Smoother CATIA renders could mean clearer, more accurate geometry for Alex's designs in review, which could help teams evaluate subsystem readiness.
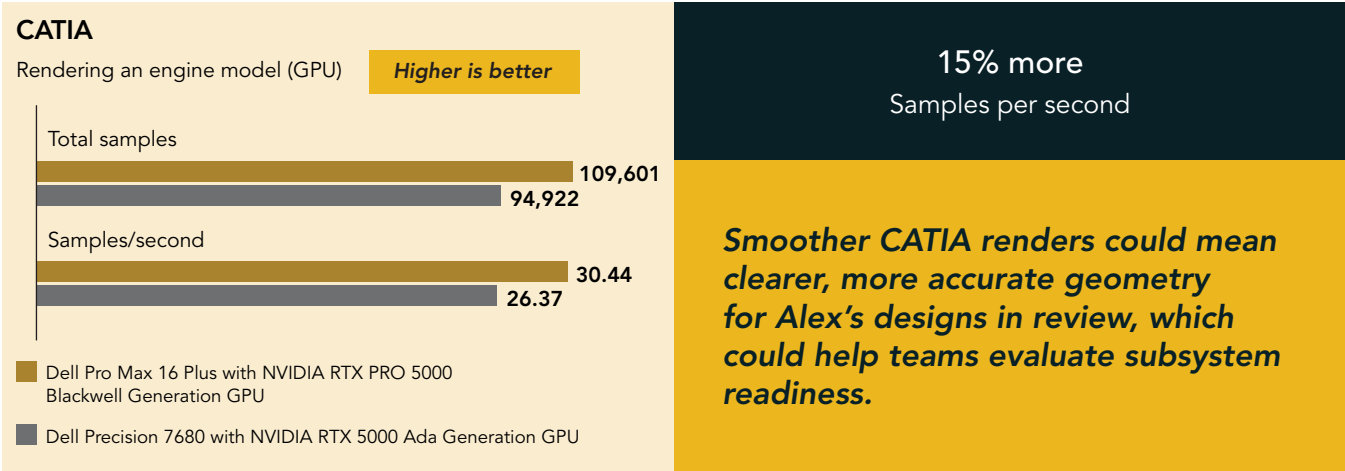
Figure 4: Results for rendering an engine model in CATIA. Source: PT.

As Figure 5 shows, the Dell Pro Max 16 Plus saved over 20 minutes importing an IGES file into CATIA. If done often, users could significantly benefit from the time savings of this task, enabling them to work on other tasks or push simulations and designs into review cycles sooner.
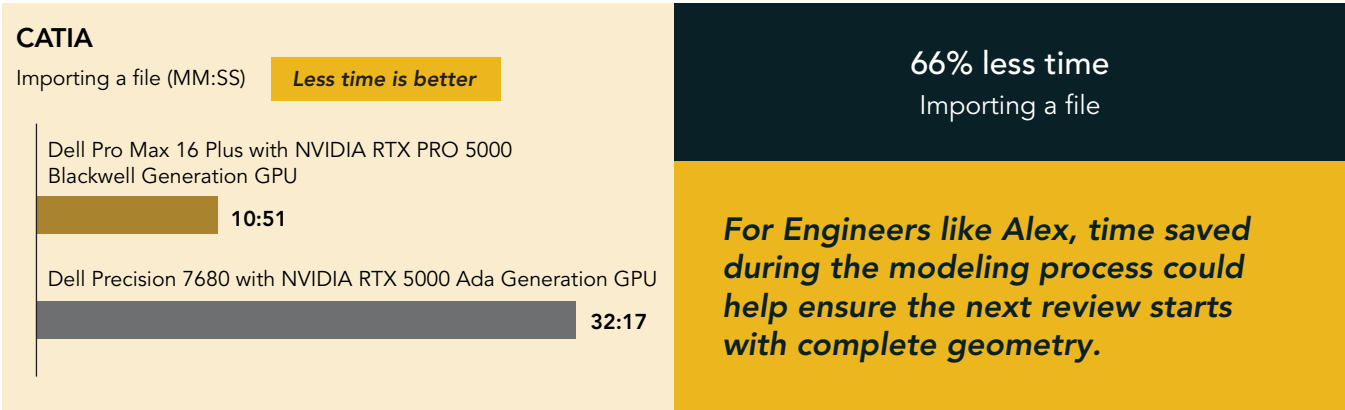
CATIA

Importing a file (MM:SS)   **Less time is better**

Dell Pro Max 16 Plus with NVIDIA RTX PRO 5000 Blackwell Generation GPU
10:51

Dell Precision 7680 with NVIDIA RTX 5000 Ada Generation GPU
32:17

66% less time
Importing a file

For Engineers like Alex, time saved during the modeling process could help ensure the next review starts with complete geometry.

Figure 5: Time to import a file in CATIA. Source: PT.

SOLIDWORKS

As SOLIDWORKS is a part of many workflows for engineering, design, architecture, and more, we timed the Dell Pro Max 16 Plus and previous-gen Precision performing the following SOLIDWORKS tasks for this workflow:

- **Visualize/render assembly:** Created realistic renders of a SOLIDWORKS assembly
- **Calculate mass/high accuracy:** Determined physical properties of a part or assembly
- **Calculate interference:** Identified if components in an assembly occupy the same space, which is important for ensuring all parts fit together correctly before manufacturing
- **Import IGES/engine:** Imported an IGES document of an engine assembly into SOLIDWORKS

In all four tasks of our SOLIDWORKS testing for this workflow, the Dell Pro Max 16 Plus again required less time than the previous-gen Precision laptop (see Figure 6). As with our design workflow, task frequency in this engineering workflow would vary by development stage and project duration. The more often users perform these tasks, the more total time they could save.
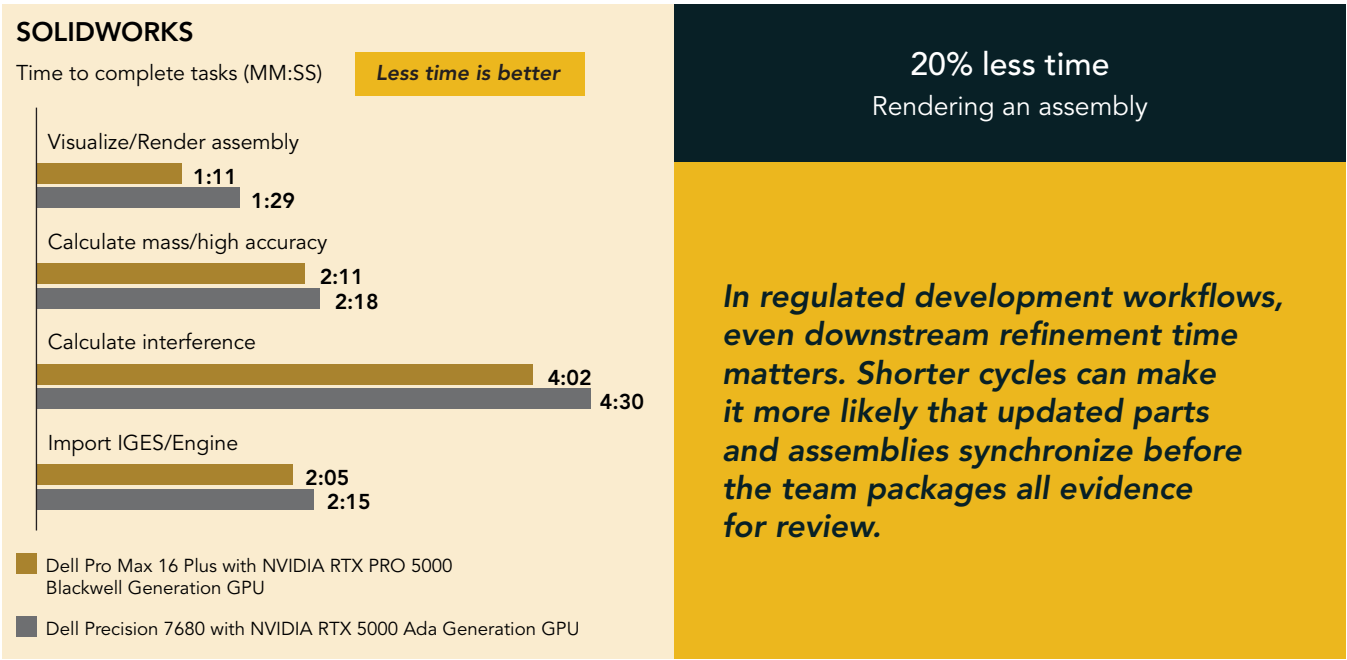
SOLIDWORKS

Time to complete tasks (MM:SS)   *Less time is better*

Visualize/Render assembly
1:11
1:29

Calculate mass/high accuracy
2:11
2:18

Calculate interference
4:02
4:30

Import IGES/Engine
2:05
2:15

■ Dell Pro Max 16 Plus with NVIDIA RTX PRO 5000 Blackwell Generation GPU
■ Dell Precision 7680 with NVIDIA RTX 5000 Ada Generation GPU

20% less time
Rendering an assembly

In regulated development workflows, even downstream refinement time matters. Shorter cycles can make it more likely that updated parts and assemblies synchronize before the team packages all evidence for review.

Figure 6: Time to complete four individual tasks in SOLIDWORKS. Source: PT.

Ansys Fluent

According to Ansys, Ansys Fluent enables users to create advanced physics models and analyze a variety of fluid properties in a customizable and intuitive space.[3] We ran three configurations of a computational fluid dynamics (CFD) simulation in Ansys Fluent, stressing the GPU and CPU:

- **CPU Solver - double precision** runs on the CPU, has high numerical accuracy, and is typically slower than GPU Solver due to the limited parallelism of CPUs comparatively. This is considered by many as the gold standard for accuracy and works for all test case designs, but users might find it particularly useful for highly sensitive simulations or regulatory-driven work.

- **GPU Solver - double precision** is faster than CPU Solver - double precision and offers similar accuracy to the CPU double-precision configuration, but GPU memory and solver constraints limit this configuration. Compared to the other two configurations, this configuration offers a middle ground—high accuracy and performance simultaneously—that is valuable in later, more refined stages of simulation development.

- **GPU Solver - single precision** can offer faster results than the other two configurations but with less accuracy. This configuration is useful for iteration, rough drafts, and long simulations.

The Dell Pro Max 16 Plus outperformed the previous-gen Precision mobile workstation in each configuration, as shown in Figure 7.

Although the single GPU single-precision time savings might be small, users might perform that task many times in the early phases of a project, and the time savings could accumulate for them. This could scale as projects grow in timeline (1 month to 6 months and beyond). Users might run the other Ansys Fluent configurations in later phases of a project, and perhaps less often, but still the compounded time savings could help them open time in their schedules. The more often users perform these tasks, the greater the cumulative savings for them could be.
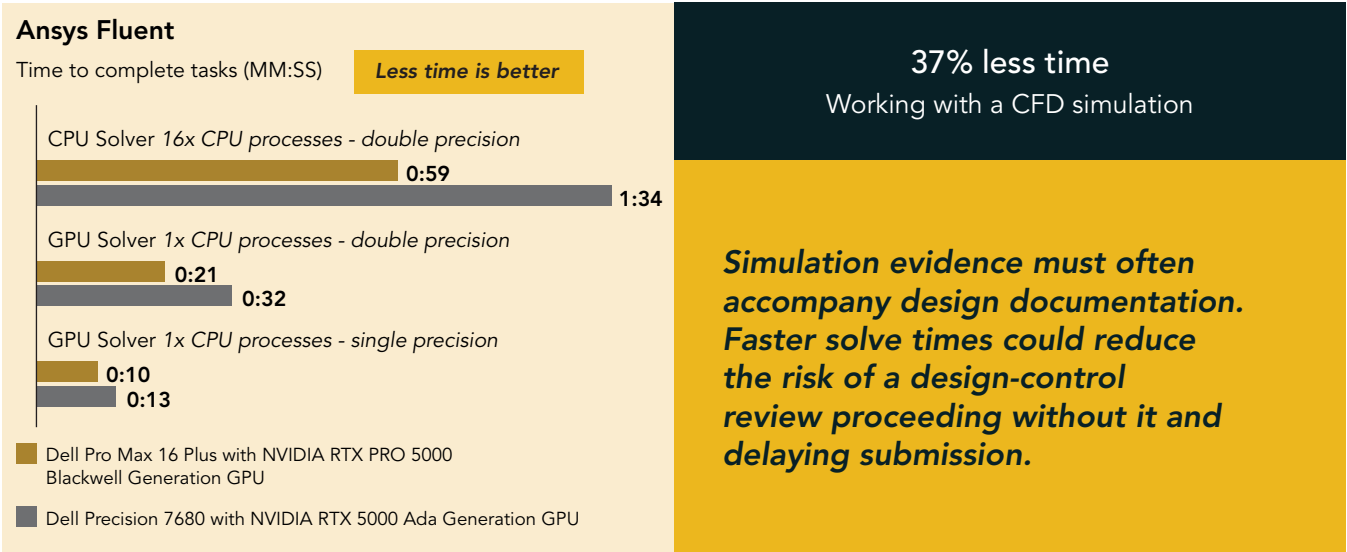

Ansys Fluent

Time to complete tasks (MM:SS)   *Less time is better*

CPU Solver *16x CPU processes - double precision*
0:59
1:34

GPU Solver *1x CPU processes - double precision*
0:21
0:32

GPU Solver *1x CPU processes - single precision*
0:10
0:13

■ Dell Pro Max 16 Plus with NVIDIA RTX PRO 5000 Blackwell Generation GPU

■ Dell Precision 7680 with NVIDIA RTX 5000 Ada Generation GPU

37% less time
Working with a CFD simulation

Simulation evidence must often accompany design documentation. Faster solve times could reduce the risk of a design-control review proceeding without it and delaying submission.

Figure 7: Times to complete three configurations of a CFD simulation in Ansys Fluent. Source: PT.

Key takeaways for the Dell Pro Max 16 Plus vs. Dell Precision 7680 comparison:

- Up to 20% less time designing in SOLIDWORKS
- Up to 66% less time designing in CATIA
- Up to 37% less time simulating in Ansys Fluent

More efficient creative workflow with Dell Pro Max Premium
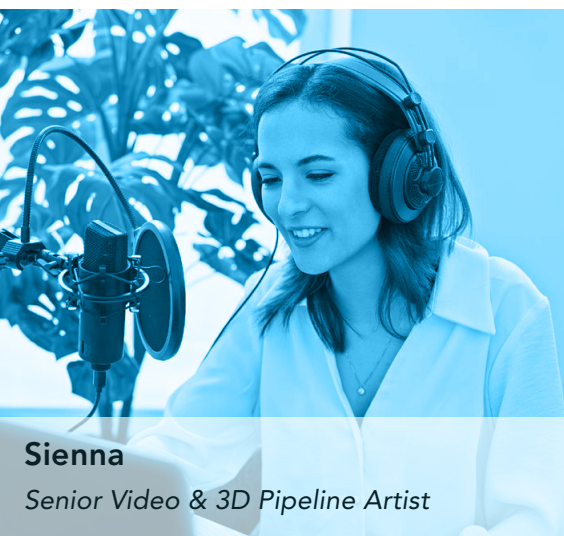
Sienna
Senior Video & 3D Pipeline Artist

Sienna moves between editing, sculpting, color grading, and producing review-ready video assets many times a day. She edits and encodes media in Adobe Premiere Pro, refines and simplifies models in Maxon ZBrush, and grades and exports in DaVinci Resolve Studio as the final step before delivery. High-fidelity rendering, proxy generation, optimized media creation, and geometry decimation are routine for her. When any of these stages take longer than necessary, her creative flow or session can stall, which could increase the risk that a deliverable misses a review or delivery window.

What faster performance could unlock for her:

- One-pass creative flow — Faster editing, sculpting, and grading cycles.
- Fewer deadline slips — Final deliverables land inside the intended production window.
- Less render/encode idle time — She can stay locked in during the day.

Editing, rendering, and more with large, high-quality video files

Creative production workflows are regularly sensitive to timing—not just in terms of how long a task takes to finish, but whether rendering, sculpting, or grading completes inside a delivery or production window. To understand how laptop hardware resources could shape those outcomes, we measured tasks in Adobe Premiere Pro, Maxon ZBrush, and DaVinci Resolve Studio on a Dell Pro Max 16 Premium laptop and on a previous-generation Dell Precision 5690 mobile workstation-class laptop. The tasks in this workload reflect steps that could occur in a typical media pipeline: encoding high-resolution footage, generating proxy/optimized media, sculpting and decimating 3D assets, and producing final color-graded exports.

Our testing showed how much less time the Dell Pro Max Premium required to complete compute-heavy creative tasks compared to the previous-generation device. For users working against fixed delivery deadlines or trying to stay active inside a finite production block without breaking flow, shorter task completion times can change outcomes. Even modest improvements can mean the difference between submitting a completed cut in the intended window or sliding into the next cycle and delaying downstream pipeline work.

Adobe Premiere Pro

Rendering high-quality video in Adobe Premiere Pro is a demanding task for Creators, who can meet project deadlines faster if they aren't stuck waiting on their systems. We timed three tasks in Adobe Premiere Pro:

- **Generate proxies**: Created low-resolution stand-ins (proxies) for high-resolution video clips to help make editing smoother and more responsive
- **Encode 1080p** and **Encode 4K video**: Processed and exported a final video project to a video file at two common resolutions, with 4K being higher quality as it has roughly four times the pixels

Across the three Premiere Pro tasks we timed, the Dell Pro Max Premium completed the work faster than the previous-generation Precision, as shown in Figure 8. The frequency of these tasks would vary by project and user preference. For example, some Editors might generate proxies at the start of a 4K project to keep the video timeline responsive, while others might choose optimized media for higher-quality previews. Editors usually render at the end of a project, but if they change the video timeline after the render, then they must render it again. These steps repeat at different rates depending on how an Editor works, and Adobe Premiere performance improvements can add up across the full editing process.
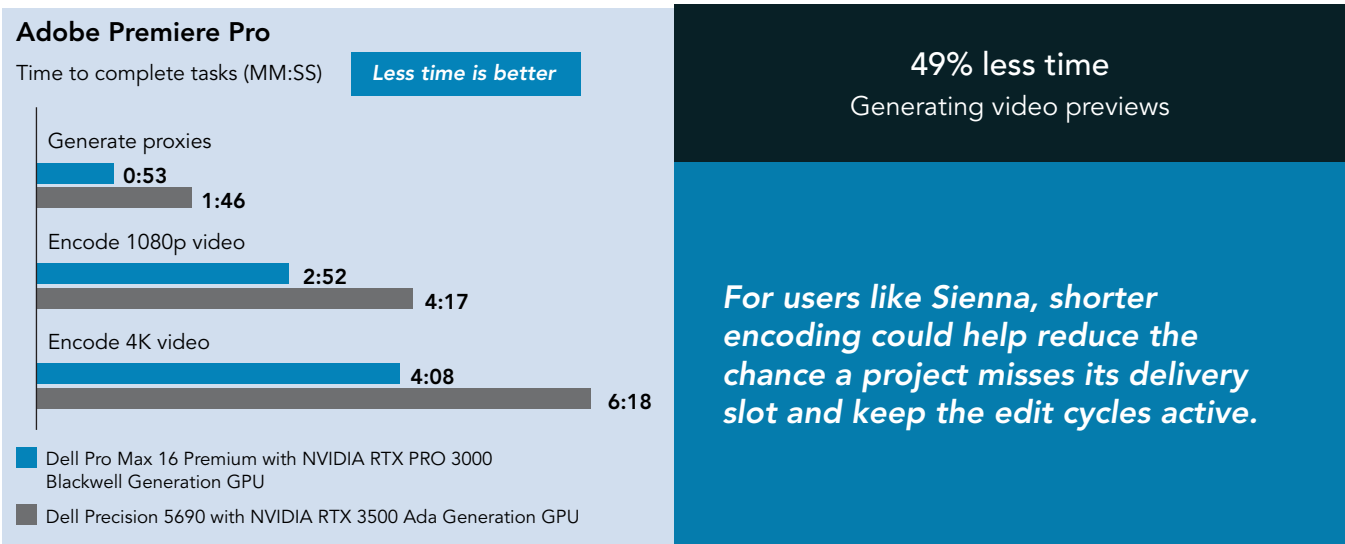

Adobe Premiere Pro
Time to complete tasks (MM:SS) — *Less time is better*

Generate proxies
- 0:53
- 1:46

Encode 1080p video
- 2:52
- 4:17

Encode 4K video
- 4:08
- 6:18

■ Dell Pro Max 16 Premium with NVIDIA RTX PRO 3000 Blackwell Generation GPU
■ Dell Precision 5690 with NVIDIA RTX 3500 Ada Generation GPU

49% less time
Generating video previews

For users like Sienna, shorter encoding could help reduce the chance a project misses its delivery slot and keep the edit cycles active.

Figure 8: Time to complete three individual tasks in Adobe Premiere Pro. Source: PT.

Maxon ZBrush

Maxon ZBrush is a tool for digital sculpting, modeling, and painting. According to Maxon, "Its customizable tools and features, including more than 200 proprietary brushes, allow you to work with polygons the same way you would with actual clay."[4] We performed four tasks with ZBrush:

- **Run ZRemesher**: This tool automatically reorganized the mesh surface geometry of a 3D model for better structure; we ran this tool twice on each high-quality model
- **Run Decimation Master (pre-process current)**: This tool analyzed our model's mesh structure and ran calculations to prepare for running Decimation Master; Decimation Master can reduce a model's complexity while retaining detail (we did not run Decimation Master itself)
- **Generate best preview render**: Rendered a high-quality preview of a model
- **Open hi-poly model project:** Loaded a detailed 3D model with millions of polygons

Across the four ZBrush tasks, the Dell Pro Max Premium was faster (up to 12 percent less time) than the previous-gen Precision, as reflected in Figure 9. Again, the frequency of these tasks would vary by project and user preference, but users might generate best preview renders every few minutes, and that time savings could add up in a workday.
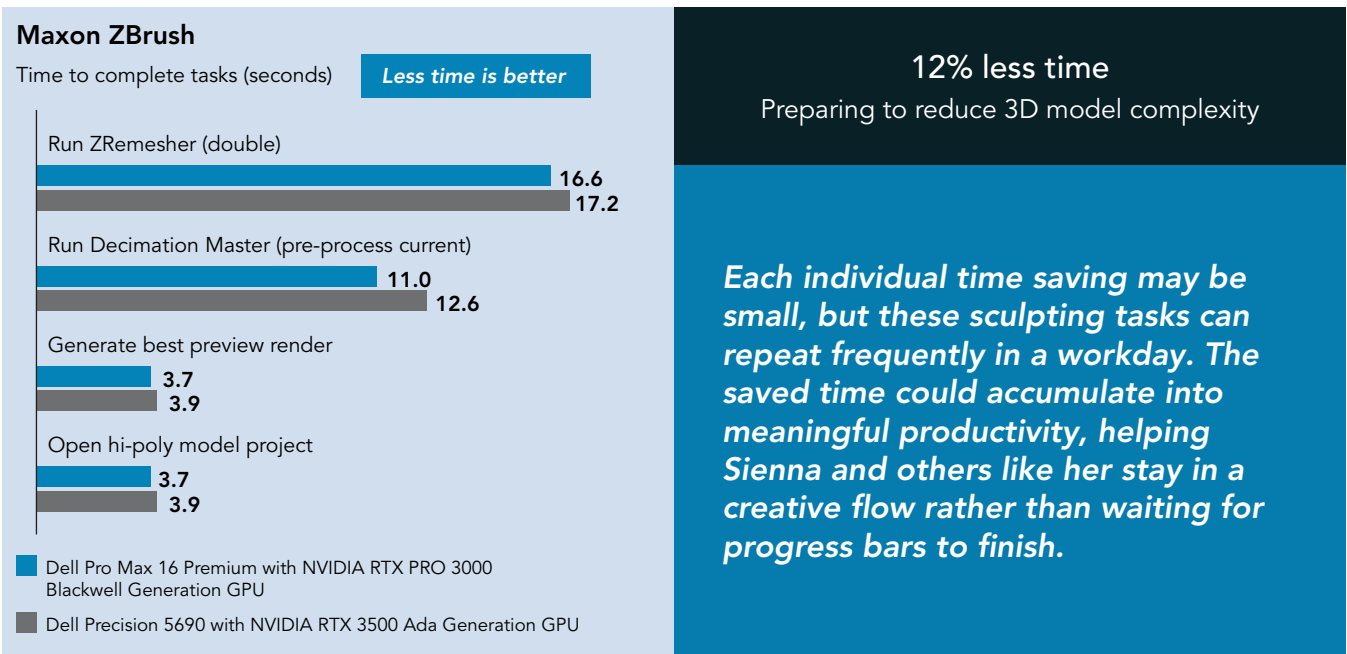

Maxon ZBrush

Time to complete tasks (seconds) — *Less time is better*

Run ZRemesher (double)
- 16.6
- 17.2

Run Decimation Master (pre-process current)
- 11.0
- 12.6

Generate best preview render
- 3.7
- 3.9

Open hi-poly model project
- 3.7
- 3.9

■ Dell Pro Max 16 Premium with NVIDIA RTX PRO 3000 Blackwell Generation GPU
■ Dell Precision 5690 with NVIDIA RTX 3500 Ada Generation GPU

12% less time
Preparing to reduce 3D model complexity

Each individual time saving may be small, but these sculpting tasks can repeat frequently in a workday. The saved time could accumulate into meaningful productivity, helping Sienna and others like her stay in a creative flow rather than waiting for progress bars to finish.

Figure 9: Time to complete four tasks in Maxon ZBrush. Source: PT.

DaVinci Resolve Studio

DaVinci Resolve Studio combines editing, color correction, visual effects, motion graphics, and audio post-production in one application.[5] The tasks we performed in this application are similar to the Adobe Premiere Pro tasks. Across the three DaVinci Resolve Studio tasks, the Dell Pro Max 16 Premium completed the tasks faster, as shown in Figure 10. The operations aim to smooth editing and preview performance, but how and when they appear in an editor's process depends on many factors, including the complexity of the footage and sequence. For example, working with noise-reduced or effects-heavy 4K footage, editors might rely on optimized media to maintain video timeline responsiveness. Generating optimized media more quickly can help them progress through early-grade passes without interruption.

DaVinci Resolve Studio

Time to complete tasks (sec)   *Less time is better*

Encode 4K video
- Dell Pro Max 16 Premium: 63.8
- Dell Precision 5690: 72.7

Encode 1080p video
- Dell Pro Max 16 Premium: 48.1
- Dell Precision 5690: 62.4

Generate optimized media
- Dell Pro Max 16 Premium: 33.4
- Dell Precision 5690: 40.4

■ Dell Pro Max 16 Premium with NVIDIA RTX PRO 3000 Blackwell Generation GPU
■ Dell Precision 5690 with NVIDIA RTX 3500 Ada Generation GPU

22% less time
Processing and exporting a final video

For colorists and finishers, faster completion could reduce the likelihood that the grade misses a review window and help keep creativity churning.
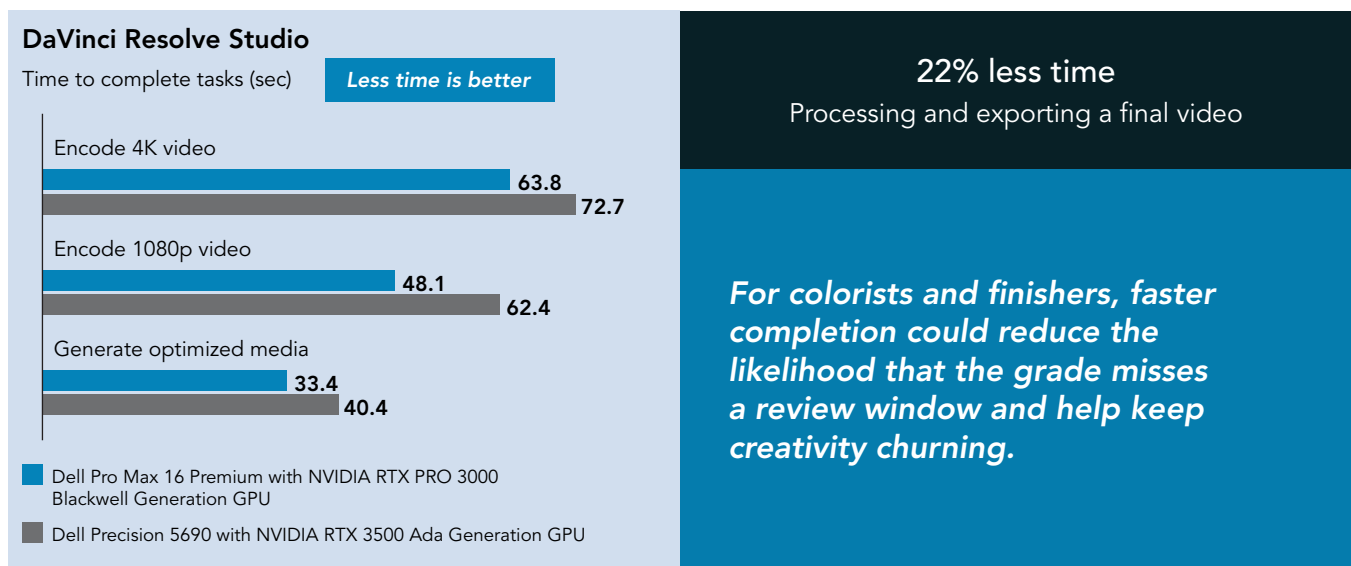
Figure 10: Time to complete three individual tasks in DaVinci Resolve. Source: PT.

Key takeaways for the Dell Pro Max 16 Premium vs. Dell Precision 5690 comparison:

- Up to 49% less time working in Adobe Premiere Pro
- Up to 12% less time sculpting in Maxon ZBrush
- Up to 22% less time encoding a video in DaVinci Resolve Studio

The potential advantages of discrete graphics over integrated graphics

Discrete GPUs (dGPUs) can offload visual and parallel workloads from the CPU, which helps reduce contention and shorten wait times during compute-heavy tasks. Having a Dell Pro Max laptop with an NVIDIA RTX PRO™ Blackwell Generation GPU could preserve momentum, helping users in their respective workflows and help them work within review, delivery, or iteration cycles instead of pushing their work out to the next one. For the most graphics-intensive workloads, using a discrete graphics card offers several key advantages over integrated graphics:

- **Higher performance:** Because discrete graphics have their own dedicated processing cores and video memory (VRAM), they can handle heavier workloads, such as 3D rendering and video editing, more effectively than integrated graphics, which share system RAM and CPU resources.[6]

- **Dedicated resources and less resource contention:** Discrete GPUs do not share their memory or core cycles with the CPU. This means potentially fewer bottlenecks tied to system memory bandwidth and more responsiveness from the rest of the system while rendering graphics-intensive tasks.[7]

- **Advanced features:** Discrete graphics cards can support advanced APIs and technologies (e.g., ray tracing, multi-monitor setups, high-resolution textures), potentially providing flexibility as demands increase.[8]

- **CUDA-enabled development workflows**: The fast parallelism of Compute Unified Device Architecture (CUDA) enables NVIDIA GPUs to perform many simple mathematical operations simultaneously. CUDA has a large ecosystem (including APIs, libraries, debugging tools, and more) that helps simplify new application development for Developers.[9] GPUs with higher CUDA core counts enable greater parallelism, which can translate into faster compute and rendering performance for GPU-optimized workloads.[10]

If your users run applications that involve GPU-intensive tasks across creative, CAD visualization, or high-fidelity rendering workflows, a dGPU could provide meaningful performance headroom and reduce delays compared to integrated graphics. Dell offers many NVIDIA RTX PRO Blackwell Generation GPU options for Dell Pro Max laptops. Read about the NVIDIA Blackwell dGPUs available for Dell Pro Max laptops.

Expedited power user workflow with Dell Pro Max

Jordan moves rapidly between coding, data querying, and package builds in the same workday. He compiles code in C++ and runs SQL queries during iterative debugging cycles. When any of these steps take longer than expected, iteration can stall, which could slow feature delivery and break development continuity. Although his workflow does not involve CAD or other graphics-intensive software, responsiveness, low-latency iteration, and uninterrupted context are essential for his day.

Jordan
Software Developer & Data Analyst

What faster performance could unlock for him:

- Shorter development loops — More iteration in a development session.
- More fluid context switching — Less time waiting for code to compile or queries to return.

Coding and data analysis, a power user workflow

Short iteration cycles can drive power user workflows, such as development and data analysis, and those cycles might happen many times per hour. To quantify how system hardware influences that pace, we measured performance in SQL query execution and C++ compilation scenarios. As previously noted, we used comparisons different than our previous workflows to show how Dell Pro Max laptops without dGPUs can offer performance boosts for Power Users compared to Dell Pro Plus enterprise laptops. We compared:

- A Dell Pro Max 14-inch laptop with a 16-core Intel Core Ultra 7 265H (up to 5.3 GHz) vs. a Dell Pro Plus 14-inch laptop with an 8-core Intel Core Ultra 7 268V processor (up to 5 GHz)
- A Dell Pro Max 14-inch laptop vs. a Dell Pro Plus 14-inch laptop, both with a 12-core AMD Ryzen AI 9 HX PRO 370 processor

The 14-inch Dell Pro Max configurations completed the power user tasks faster than the Dell Pro Plus laptops, which could mean reduced wait times between context shifts, iteration loops, and more. The compilation workloads showed the most dramatic results, with the Intel processor-based configuration building the Unreal Engine over two hours faster than the Intel processor-based Dell Pro Plus laptop. For users like Jordan, time savings like this can help keep development sessions active rather than stalled, enabling more debugging attempts, more SQL exploration, and more functional refinement within a workday.

SQL query execution

SQL queries retrieve, analyze, and manipulate structured data during debugging and iterative analytics workflows. In our data analysis task for a single user, the Dell Pro Max configurations required less time, as shown in Figure 11. Frequency for this task can vary, but users might find themselves running data analysis queries often against a SQL database, perhaps a few times a day or many times a week. The time savings from using the Dell Pro Max 14 could enable Power Users to hop on a video call sooner to discuss results or help decision makers reach valuable insights faster.
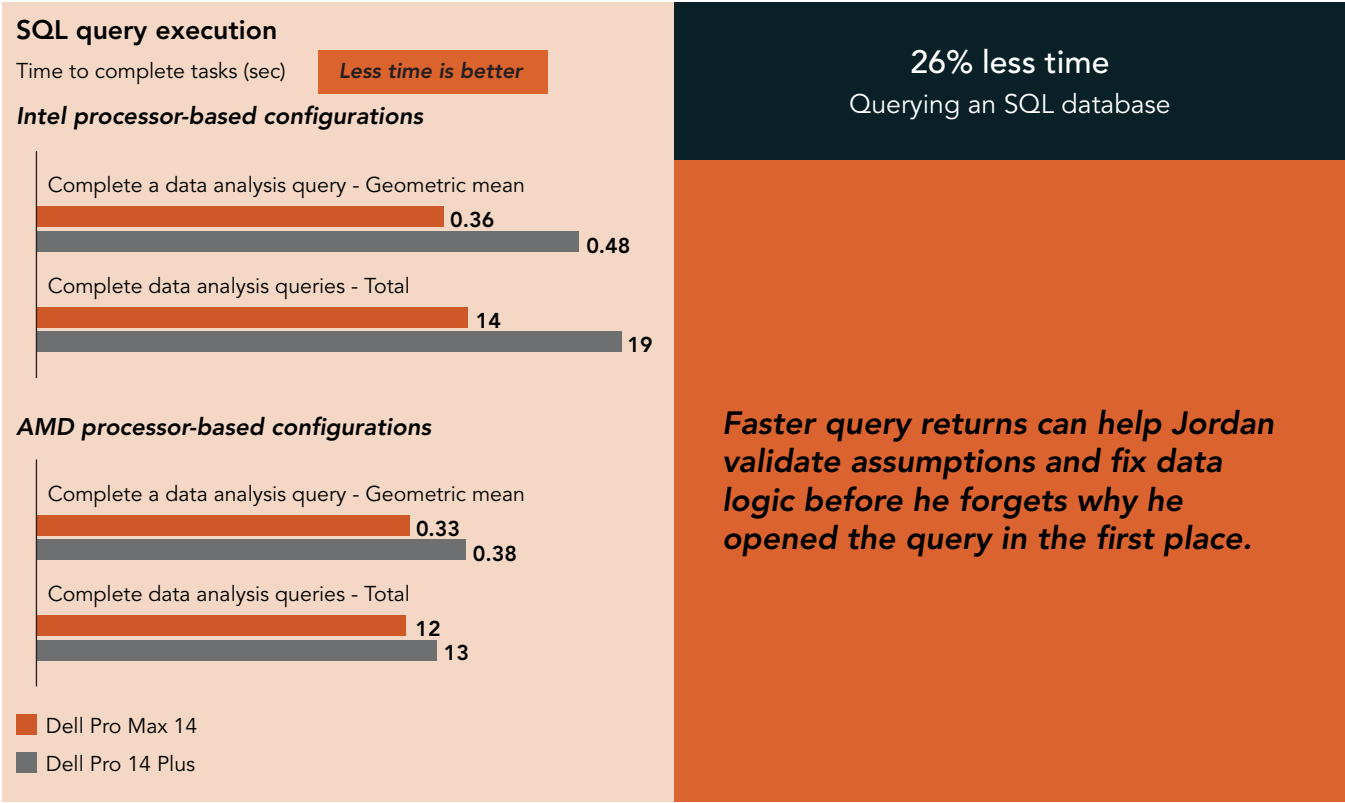
SQL query execution

Time to complete tasks (sec)   *Less time is better*

Intel processor-based configurations

Complete a data analysis query - Geometric mean
- Dell Pro Max 14: 0.36
- Dell Pro 14 Plus: 0.48

Complete data analysis queries - Total
- Dell Pro Max 14: 14
- Dell Pro 14 Plus: 19

AMD processor-based configurations

Complete a data analysis query - Geometric mean
- Dell Pro Max 14: 0.33
- Dell Pro 14 Plus: 0.38

Complete data analysis queries - Total
- Dell Pro Max 14: 12
- Dell Pro 14 Plus: 13

■ Dell Pro Max 14
■ Dell Pro 14 Plus

26% less time
Querying an SQL database

Faster query returns can help Jordan validate assumptions and fix data logic before he forgets why he opened the query in the first place.

Figure 11: Time to complete data analysis queries against a SQL database. Source: PT.

C++ compilations

Compiling C++ code converts human-readable source files into executable binaries or modules for testing features. When working with a compiled language like C++, users must frequently recompile any code they edit to test or use it. Users do not fully compile an entire codebase often, but they do recompile source code after changing it regularly when working with C++, so the time savings with a Dell Pro Max 14 would likely repeat often, perhaps many times a day.

In our compilation tasks, the Dell Pro Max 14 configurations completed builds faster, as shown in Figure 12. Building an Unreal Engine 5 with the Intel processor-based Dell Pro Max 14 configuration saved over two hours, the largest time savings in our testing. Again, users might save that much time every day, but the savings indicates the serious advantage of the Dell Pro Max 14 for these kinds of power user tasks. In addition to the time savings, Dell claims that users "can also rely on long battery life – up to 18 hours on the 14-inch [Dell Pro Max]."[11]

C++ compilations

Time to complete tasks (HH:MM:SS)   *Less time is better*

Intel processor-based configurations

Building Mozilla Firefox from source
- 0:23:04
- 0:59:20

Building Unreal Engine 5 from source
- 1:26:19
- 3:46:25

AMD processor-based configurations

Building Mozilla Firefox from source
- 0:23:40
- 0:31:30

Building Unreal Engine 5 from source
- 1:19:47
- 2:41:02

■ Dell Pro Max 14
■ Dell Pro 14 Plus

61% less time
Compiling Unreal Engine source code

For Power Users like Jordan, multi-hour reductions can reshape the workday. That time savings could enable Jordan to turn potentially idle build time into active coding and testing cycles.
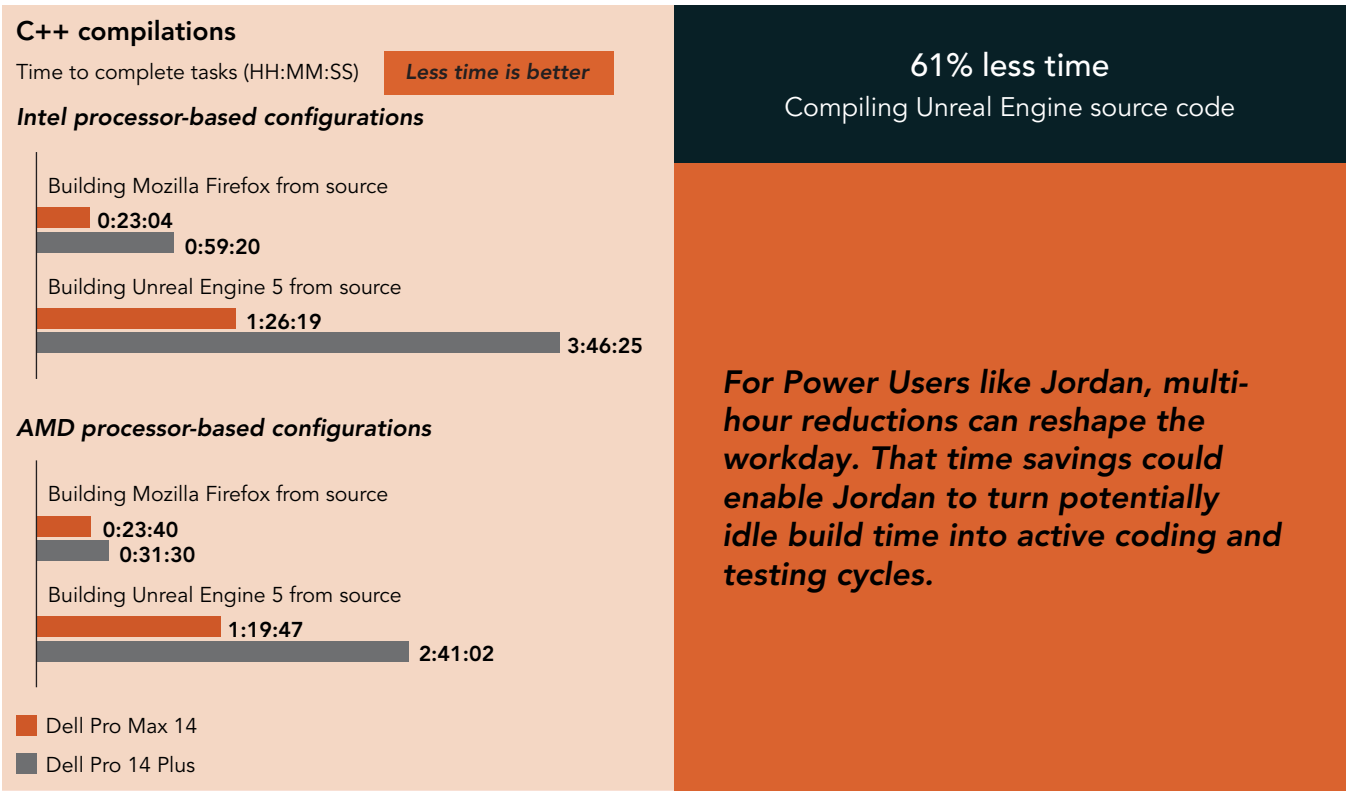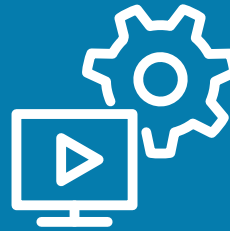
Figure 12: Time to compile C++ code. Source: PT.

Key takeaways for the Dell Pro Max 14 configurations vs. Dell Pro Plus 14 configurations:

- Up to 26% less time executing SQL queries
- Up to 61% less time compiling C++ code

Conclusion

At a high level, many applications appear similar, but the work inside each is not the same. Those differences directly influence which hardware configurations can deliver performance differences that matter to users. CAD modeling and iterations stress systems in ways that differ from physics-based simulation, GPU-heavy rendering, creative production, and rapid compile-test-query development cycles.

Our testing showed that upgrading to Dell Pro Max laptops from comparable previous-generation Dell mobile workstations can offer a host of benefits across multiple workload categories. These time savings in task completion, including up to 2 hours less when coding and 66 percent less time importing a large file into a CAD application, can help preserve momentum inside finite review, delivery, and iteration windows and help keep project timelines on track. Choosing the right Dell Pro Max system for your users' workflows, and not assuming one configuration is right for all users, could be key to maximizing value for real users doing real work.

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