ACCELERATING WORKSTATION PERFORMANCE

FOR AN EVOLVING WORLD

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HUGE DEMAND FOR
IMPROVED VISUALIZATION

MANUFACTURING

MEDIA

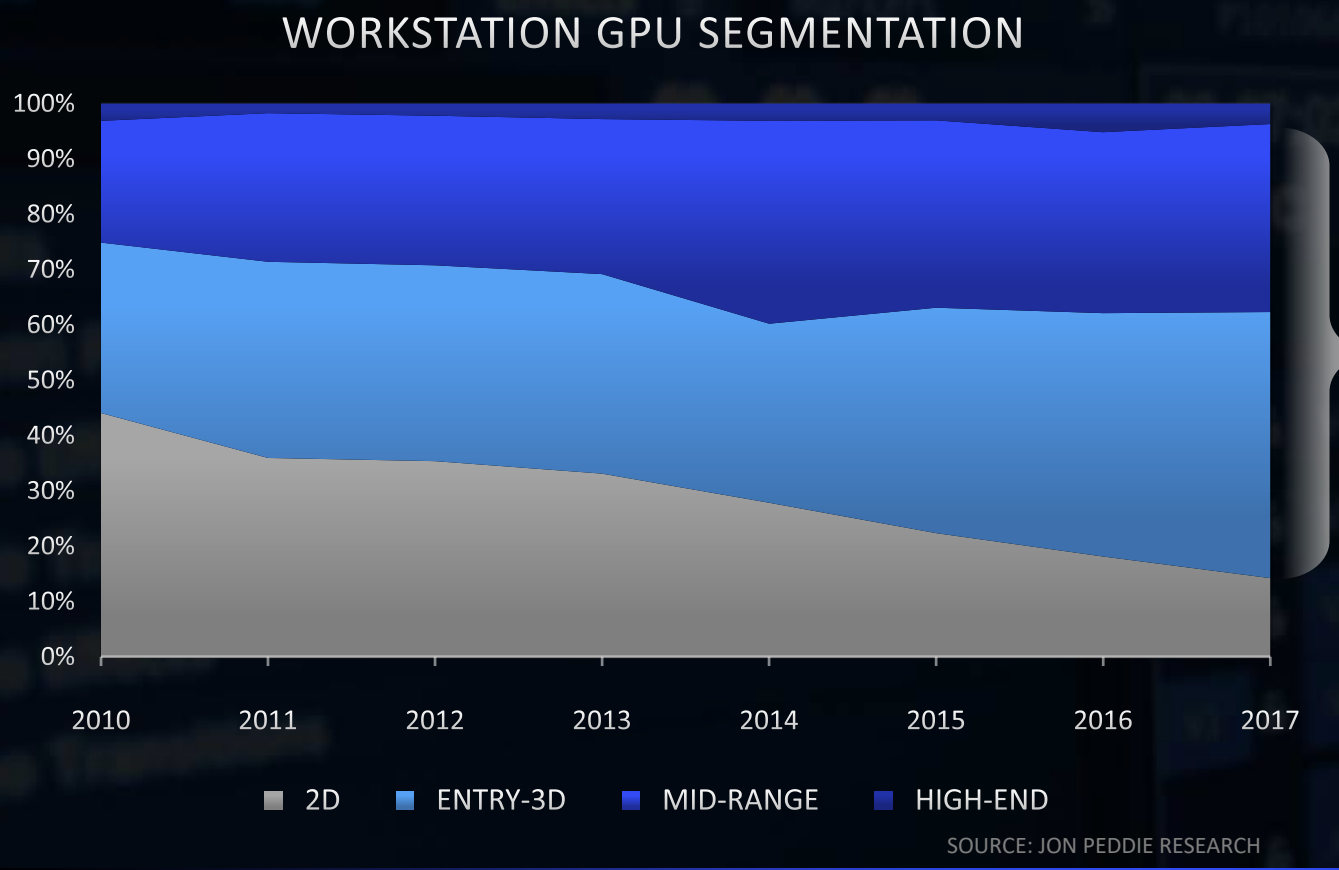
ARCHITECTURE

VISUALIZATION TECHNOLOGIES

AUGMENTED & VIRTUAL REALITY

PHOTOREALISTIC RENDERING

THE EVOLUTION OF
PROFESSIONAL WORKFLOWS



SOURCE: JON PEDDIE RESEARCH

Traditional 2D CAD is rapidly fading away

Growing demand for GPU performance

High quality visualization is becoming commonplace in all aspects of professional design workflows

INTRODUCING

AMD RADEON™ PRO WX 8200

8GB HBM2 MEMORY

UP TO **512GB/s** MEMORY BANDWIDTH

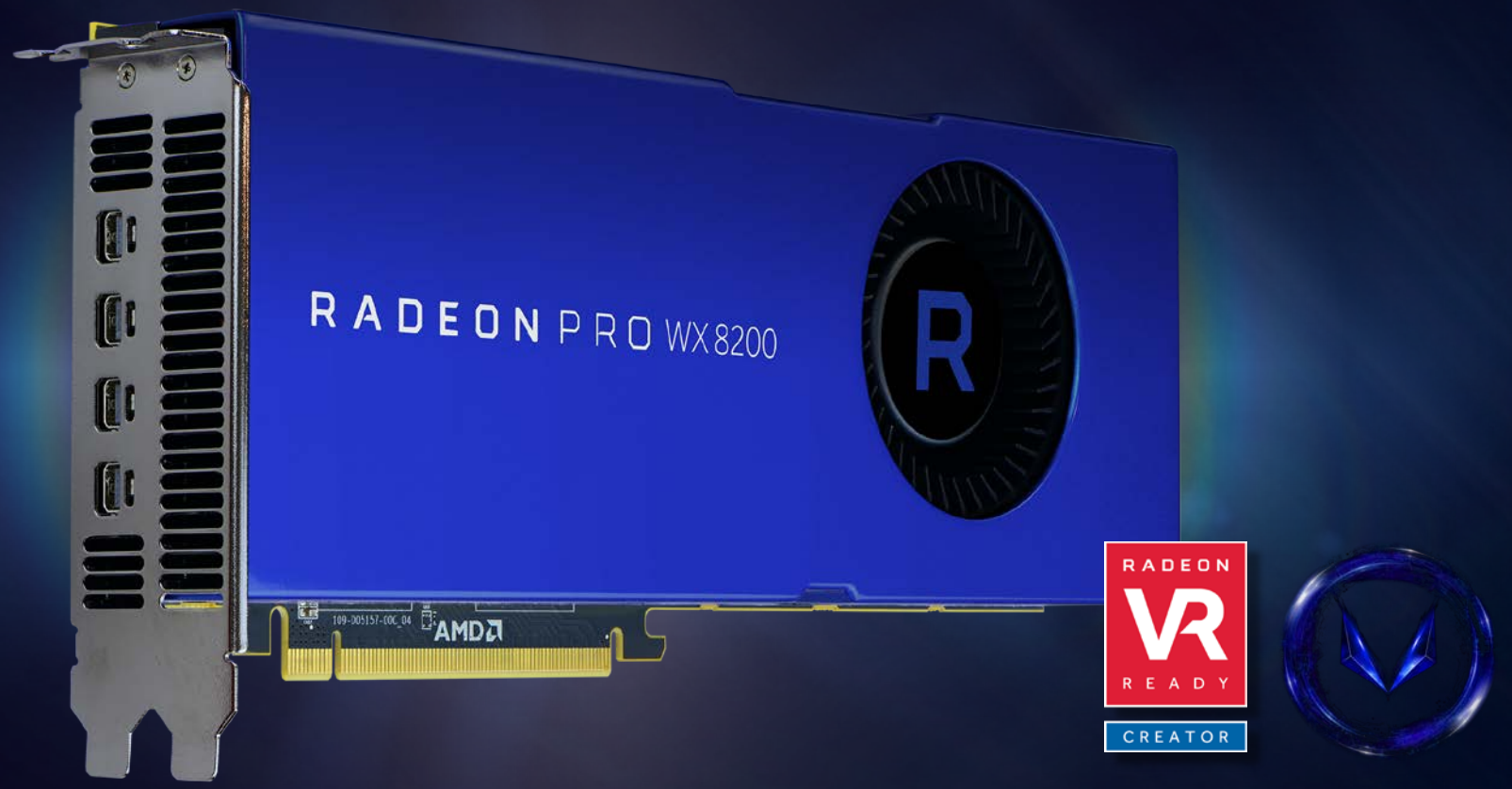
56 COMPUTE UNITS*

UP TO **11** TFLOPS FP32

4X DISPLAY OUTPUTS

8K DISPLAY SUPPORT

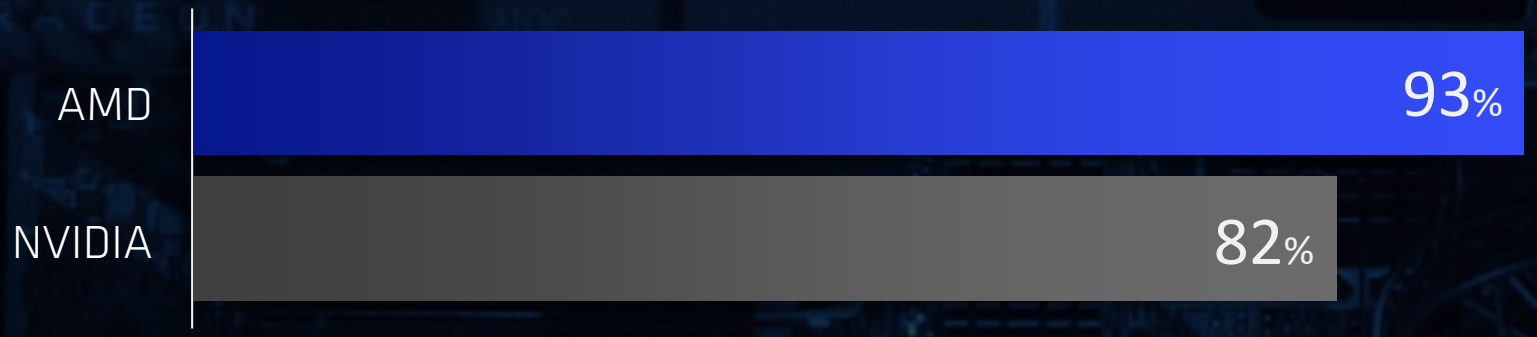
See Endnotes



RELIABILITY | INNOVATION | PERFORMANCE

RELIABILITY

OPTIMIZE YOUR GRAPHICS



93%

DRIVER PASS RATE*

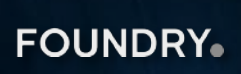
STRESS TESTED FOR 24/7 ENVIRONMENTS

EXTENSIVE OEM PLATFORM TESTING

EXTENSIVE ISV CERTIFICATION TESTING

*In May 2018, AMD commissioned QA Consultants to evaluate the stability of several of the latest graphics drivers from both AMD and NVIDIA. See page 1 of the "Graphics Driver Quality - Determination of Stability from Leading Market Vendors" report at https://www.amd.com/system/files/documents/graphics-driver-quality.pdf for more details.

ISV CERTIFICATIONS AND PARTNERSHIPS



CUTTING EDGE
INNOVATION

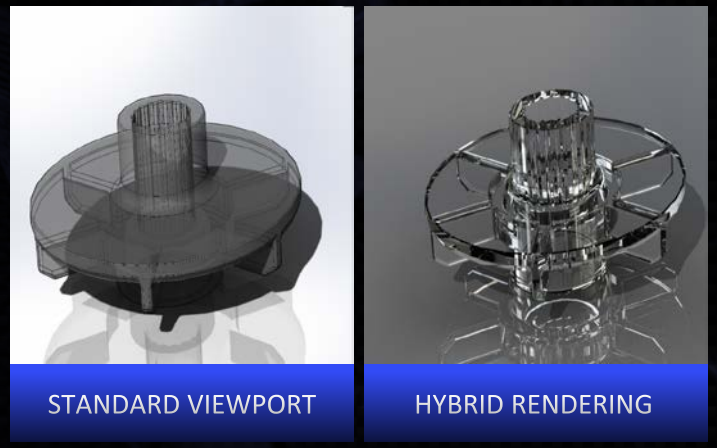
ENABLING MISSION-CRITICAL WORKFLOWS

RADEON™ PRORENDER

RADEON™ PRO RELIVE

DRIVER OPTIONS

AMD RADEON PRORENDER



HYBRID RENDERING USING RASTERIZATION AND RAYTRACING

ProRender Hybrid combines the realistic light effects of ray-tracing with the speed of rasterization.

SCREEN IMAGE SIMULATED

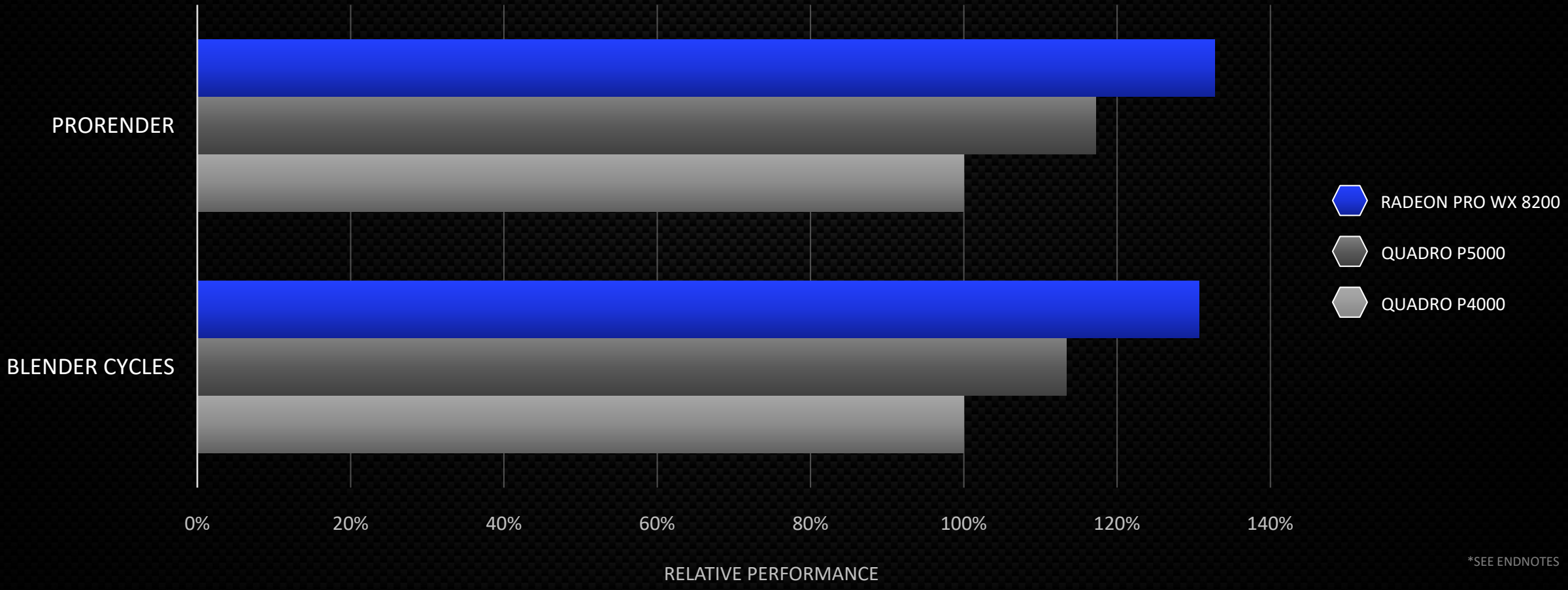
HETEROGENEOUS RENDERING USING CPU + GPU

Up to 22% performance uplift over GPU alone*

See Endnotes

PERFORMANCE

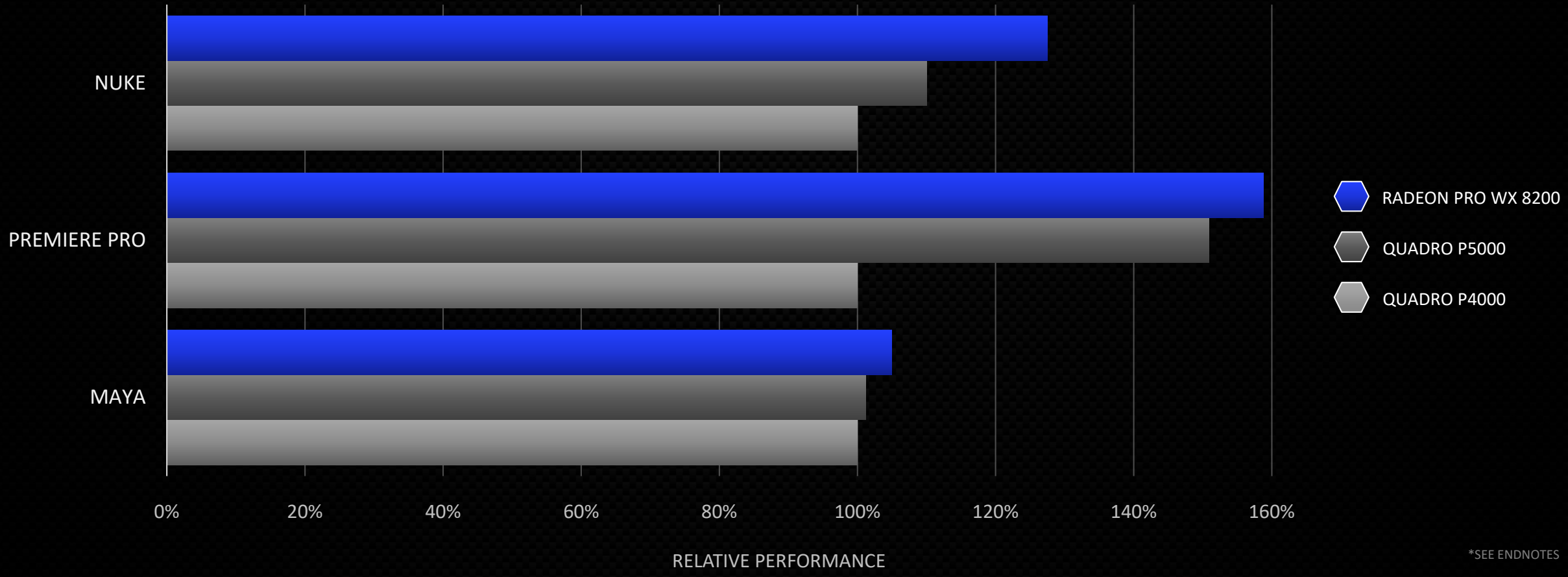
GPU RENDERING



*SEE ENDNOTES

PERFORMANCE

MEDIA & ENTERTAINMENT



*SEE ENDNOTES

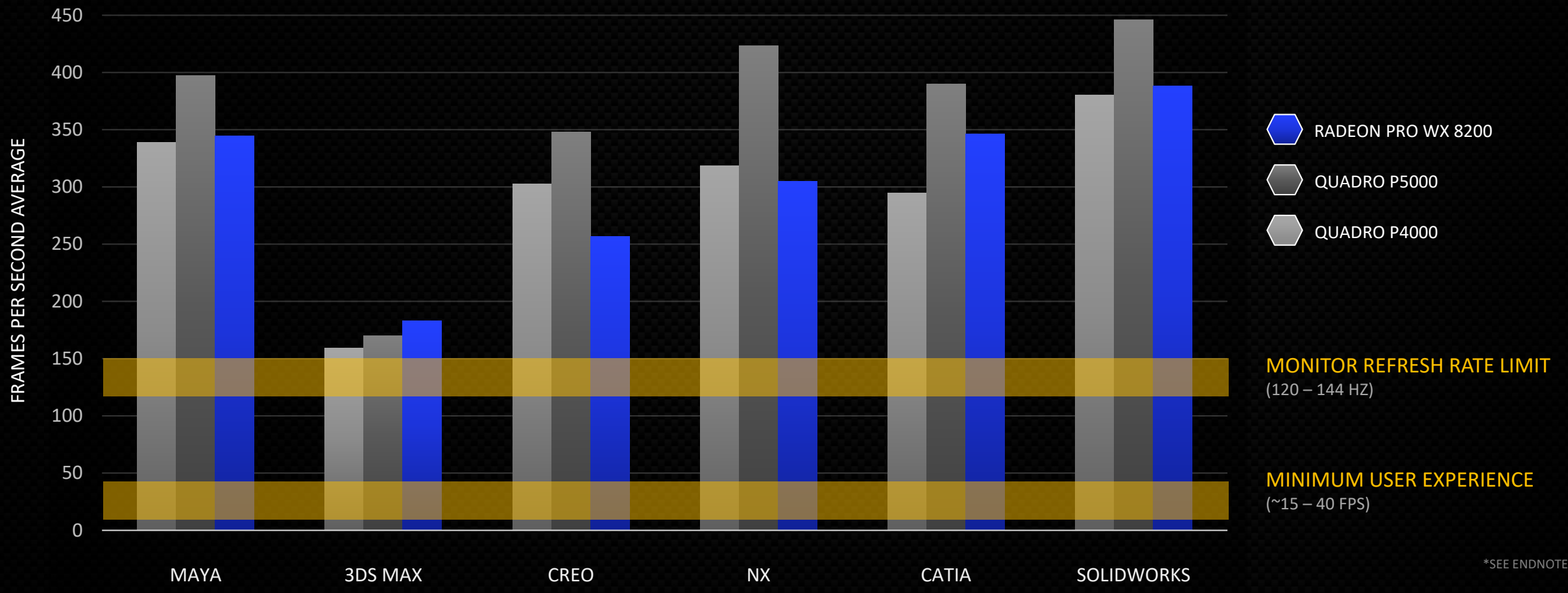
PROFESSIONAL VR LEADERSHIP

VRMARK CYAN ROOM

*SEE ENDNOTES

PERFORMANCE

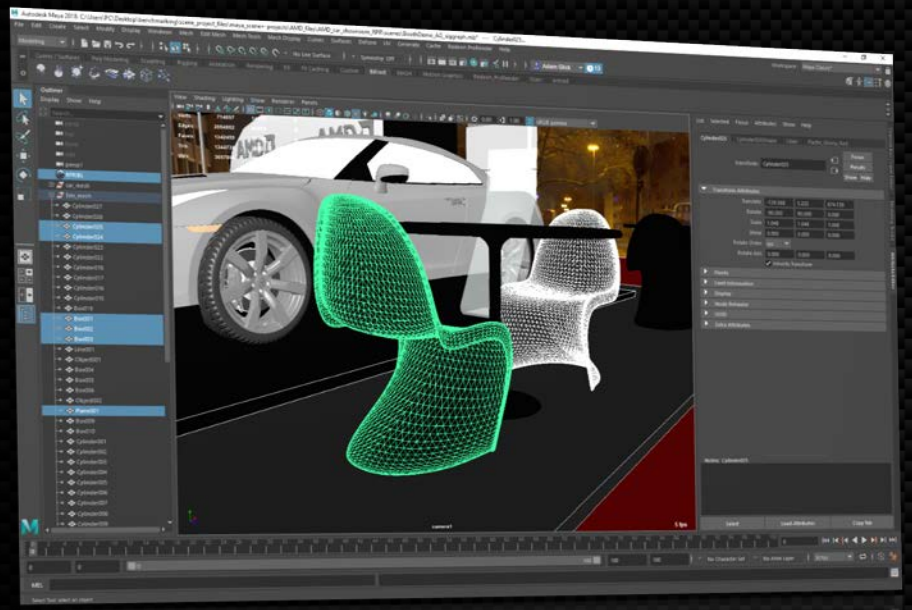
COMPUTER-AIDED DESIGN



*SEE ENDNOTES

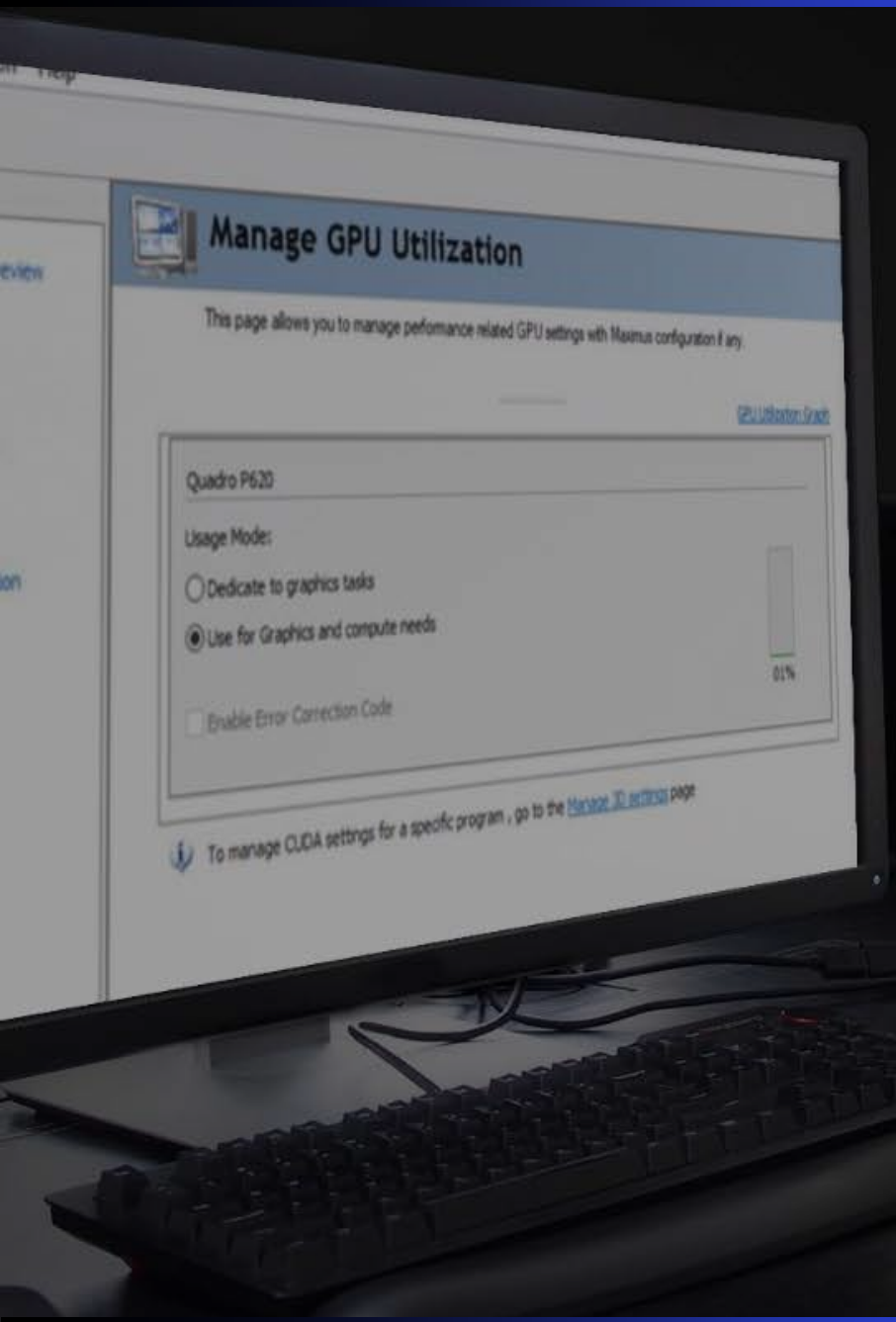
GPU MULTITASKING

THE NEW WORKFLOW REALITY



DESIGN **+** **RENDER**

AT THE SAME TIME!



GPU MULTITASKING

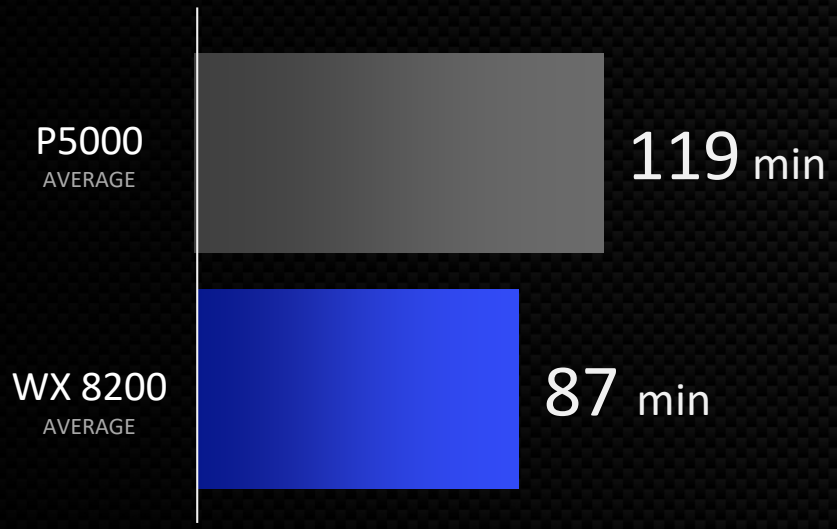
WITH THE COMPETITION

Choose between graphics or compute tasks

GPU MULTITASKING

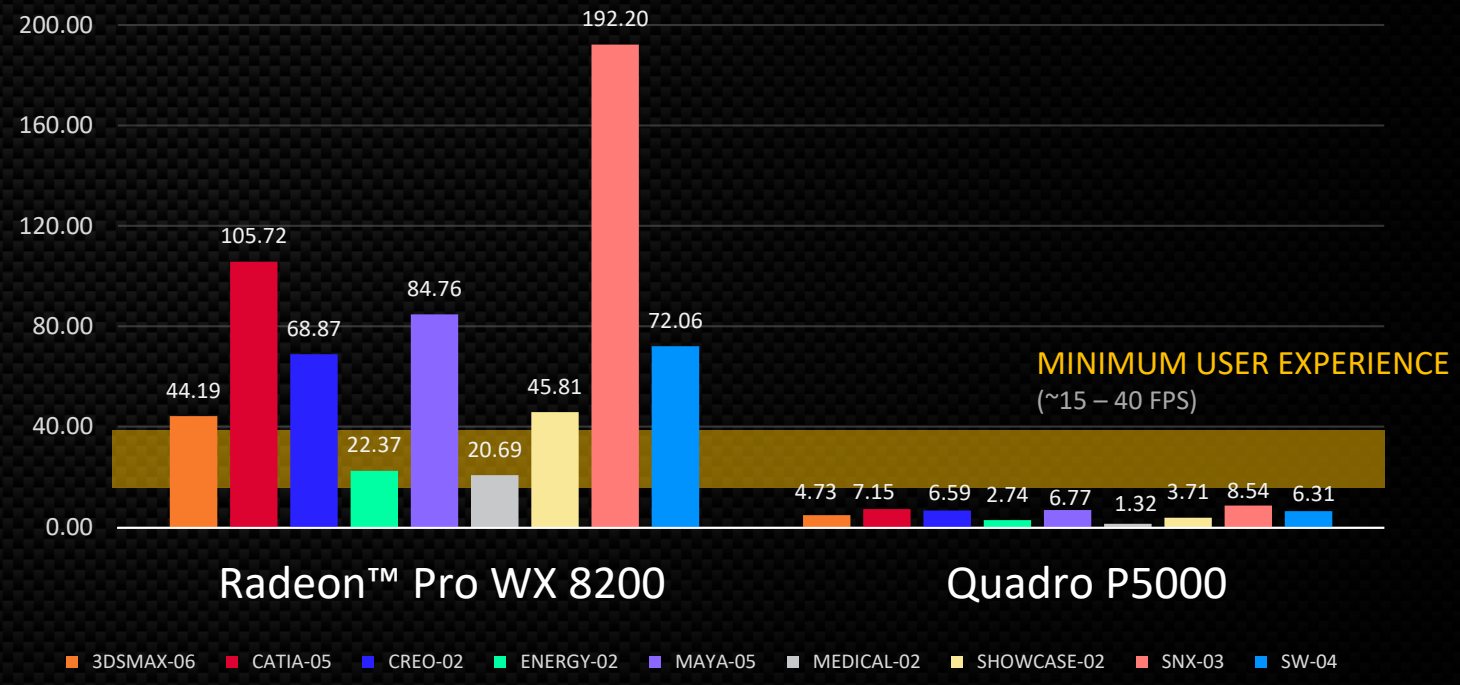
AVERAGE 13x FASTER*

BLENDER/CYCLES RENDER TO COMPLETION (DURING SPECviewperf® 13 RUN)



(IN MINS TO COMPLETION, LOWER IS BETTER)

SPECviewperf® 13 (+BLENDER/CYCLES IN BACKGROUND)

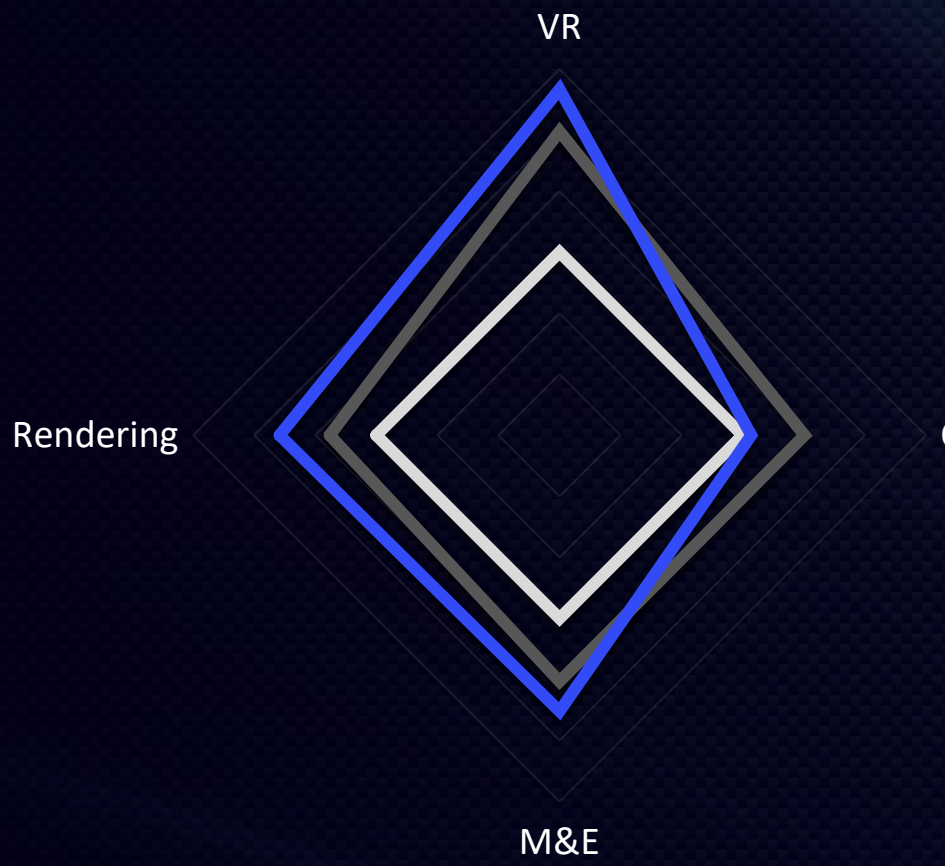


RENDER AND DESIGN AT THE SAME TIME!

*SEE ENDNOTES

AMD RADEON™ PRO WX 8200

INCREDIBLE PERFORMANCE



AVERAGE **13X**

FASTER MULTITASKING PERFORMANCE THAN NVIDIA'S QUADRO P5000

RADEON PRO WX 8200 | QUADRO P5000 | QUADRO P4000

*SEE ENDNOTES

WORLD'S BEST WORKSTATION GRAPHICS PERFORMANCE* FOR $999

*Pricing USD, SEP. See Endnotes

RADEON™ PRO WX 8200

PUTTING THE PRO IN PRODUCTIVITY

RELIABILITY

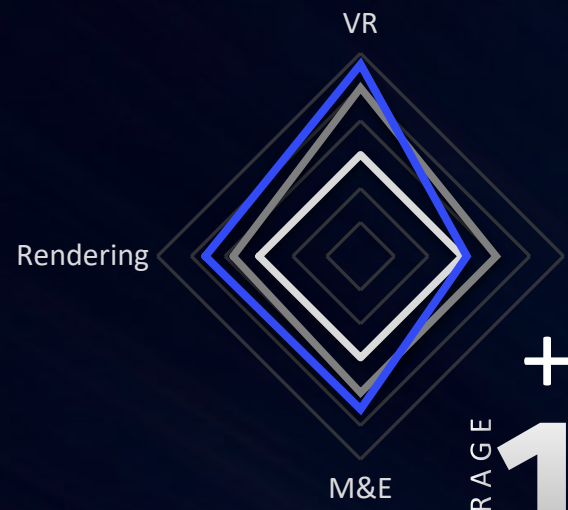
93%

DRIVER PASS RATE*

INNOVATION

- RADEON™ PRORENDER
- RADEON™ PRO RELIVE
- DRIVER OPTIONS

PERFORMANCE**



AVERAGE **+13X**

FASTER MULTITASKING PERFORMANCE

*IN MAY 2018, AMD COMMISSIONED QA CONSULTANTS TO EVALUATE THE STABILITY OF SEVERAL OF THE LATEST GRAPHICS DRIVERS FROM BOTH AMD AND NVIDIA. SEE PAGE 1 OF THE "GRAPHICS DRIVER QUALITY - DETERMINATION OF STABILITY FROM LEADING MARKET VENDORS" REPORT AT HTTPS://WWW.AMD.COM/SYSTEM/FILES/DOCUMENTS/GRAPHICS-DRIVER-QUALITY.PDF FOR MORE DETAILS.
**SEE END NOTES FOR DETAILS

THANK YOU!

ENDNOTES

Slide 6:

AMD Radeon™ and FirePro™ GPUs based on the Graphics Core Next architecture consist of multiple discrete execution engines known as a Compute Unit (“CU”). Each CU contains 64 shaders (“Stream Processors”) working together. GD-78

Slide 11:

Testing conducted by AMD Performance Labs as of July 16th, 2018, on a Gigabyte X399 Aorus Gaming 7 motherboard test system comprising of AMD Threadripper 2990WX 32-core processor@ 3.0 GHz, 64GB DDR4 system memory, 512GB Samsung 961 NVMe drive, Microsoft® Windows® 10 64-bit OS, AMD Radeon™ Pro WX 8200 graphics. AMD Radeon™ Pro internal driver 18.20. Benchmark Applications: AMD Radeon™ ProRender (Internal Build). Performance measured using the internal “Ferrari_Demo” model @ 1920x1000 resolution. AMD Radeon Pro WX 8200 only = 314.48 ms/frame. AMD Threadripper 2990WX + AMD Radeon Pro WX 8200 = 244.02 ms/frame. Improvement = 314.48/244.02 = 22.4% Uplift. PC manufacturers may vary configurations, yielding different results. Performance may vary based on use of latest drivers.

Slide 12:

Testing conducted by AMD Performance Labs as of August 1st, 2018, on a test system comprising of Intel E5-1650 v3, 16GB DDR4 system memory, Samsung 850 PRO 512GB SSD, Windows® 10 Enterprise 64-bit, Radeon™ Pro WX 8200, NVIDIA Quadro P4000, NVIDIA Quadro P5000, AMD graphics driver 18.20-180713a, NVIDIA graphics driver 391.74. Benchmark Application: Radeon™ ProRender. AMD Radeon™ Pro WX 8200 score: 39 seconds. NVIDIA Quadro P5000 score: 48 seconds. NVIDIA Quadro P4000 score: 58 seconds. Performance Differential: 1-39/48 = 18.75% better score on Radeon™ Pro WX WX 8200 than on NVIDIA P5000. Performance Differential: 1-39/58 = 32.76% better score on Radeon™ Pro WX WX 8200 than on NVIDIA P4000. Benchmark application: Blender Cycles 2.7.9 – “Pavillon Barcelone” Scene. AMD Radeon™ Pro WX 8200 score: 405 seconds. NVIDIA Quadro P5000 score: 506 seconds. NVIDIA Quadro P4000 score: 584 seconds. Performance Differential: 1-405/506 = 20% better score on Radeon™ Pro WX WX 8200 than on NVIDIA P5000. Performance Differential: 1-405/584 = 30.6% better score on Radeon™ Pro WX WX 8200 than on NVIDIA P4000. Rendering performance represented as an average score based on results above. WX 8200 vs. P4000 = (32.76+30.65)/2 = 31.71%, WX 8200 vs. P5000 = (18.75 + 19.96)/2 = 19.36%. PC manufacturers may vary configurations, yielding different results. Performance may vary based on use of latest drivers. Performance may vary based on use of latest drivers.

ENDNOTES

Slide 13:

Testing conducted by AMD Performance Labs as of August 1st, 2018, on a test system comprising of Intel E5-1650 v3, 16GB DDR4 system memory, Samsung 850 PRO 512GB SSD, Windows® 10 Enterprise 64-bit, Radeon™ Pro WX 8200, NVIDIA Quadro P4000, NVIDIA Quadro P5000, AMD graphics driver 18.20-180713a, NVIDIA graphics driver 391.74. Benchmark Application: Foundry Nuke 11, Denoise and Motion Blur Benchmark. AMD Radeon™ Pro WX 8200 score: 29 seconds. NVIDIA Quadro P5000 score: 36 seconds. NVIDIA Quadro P4000 score: 40 seconds. Performance Differential: 1-29/36 = 19.4% better score on Radeon™ Pro WX WX 8200 than on NVIDIA P5000. Performance Differential: 1-29/40 = 27.5% better score on Radeon™ Pro WX WX 8200 than on NVIDIA P4000. Benchmark Application: Adobe Premiere Pro. AMD Radeon™ Pro WX 8200 score: 752 seconds. NVIDIA Quadro P5000 score: 897 seconds. NVIDIA Quadro P4000 score: 1825 seconds. Performance Differential: 1-752/897 = 16% better score on Radeon™ Pro WX WX 8200 than on NVIDIA P5000. Performance Differential: 1-752/1825 = 58.79% better score on Radeon™ Pro WX WX 8200 than on NVIDIA P4000. Benchmark Application: Autodesk Maya 2017. AMD Radeon™ Pro WX 8200 score: 7.92. NVIDIA Quadro P5000 score: 7.64. NVIDIA Quadro P4000 score: 7.55. Performance Differential: 7.92/7.64= 3.6% better score on Radeon™ Pro WX WX 8200 than on NVIDIA P5000. Performance Differential: 7.92/7.55= 4.9% better score on Radeon™ Pro WX WX 8200 than on NVIDIA P4000. Media and Entertainment performance represented as an average score based on results above. WX 8200 vs. P4000 = (4.9+58.79+27.5)/3 = 30.40%, WX 8200 vs. P5000 = (3.66+16.16+19.44)/3 = 13.09%. PC manufacturers may vary configurations, yielding different results. Performance may vary based on use of latest drivers. Performance may vary based on use of latest drivers.

Slide 14:

Testing conducted by AMD Performance Labs as of August 1st, 2018, on a test system comprising of Intel E5-1650 v3, 16GB DDR4 system memory, Samsung 850 PRO 512GB SSD, Windows® 10 Enterprise 64-bit, Radeon™ Pro WX 8200, NVIDIA Quadro P4000, NVIDIA Quadro P5000, AMD graphics driver 18.20-180713a, NVIDIA graphics driver 391.74.Benchmark Application: VRMark, Cyan Room. AMD Radeon™ Pro WX 8200 score: 6979. NVIDIA Quadro P5000 score: 6351. NVIDIA Quadro P4000 score: 4550. Performance Differential: 6979/6351 = 9.9% performance than the P5000. Performance Differential: 6979/4550= 53.38% better performance on Radeon™ Pro WX WX 8200 than on NVIDIA P4000. PC manufacturers may vary configurations, yielding different results. Performance may vary based on use of latest drivers. Performance may vary based on use of latest drivers

ENDNOTES

Slide 15:

Testing conducted by AMD Performance Labs as of August 1st, 2018, on a test system comprising of Intel E5-1650 v3, 16GB DDR4 system memory, Samsung 850 PRO 512GB SSD, Windows® 10 Enterprise 64-bit, Radeon™ Pro WX 8200, NVIDIA Quadro P4000, NVIDIA Quadro P5000, AMD graphics driver 18.20-180713a, NVIDIA graphics driver 391.74. Benchmark Application: SPECviewperf 13 catia-05. AMD Radeon™ Pro WX 8200 score: 346.29 fps. NVIDIA Quadro P5000 score: 389.71 fps. NVIDIA Quadro P4000 score: 294.83 fps. Performance Differential: 346.29/389.71 = 11% less performance than the P5000. Performance Differential: 346.29/294.83 = 17.4% better performance on Radeon™ Pro WX WX 8200 than on NVIDIA P4000. Benchmark Application: SPECviewperf 13 creo-02. AMD Radeon™ Pro WX 8200 score: 256.85 fps. NVIDIA Quadro P5000 score: 348.08 fps. NVIDIA Quadro P4000 score: 302.86 fps. Performance Differential: 256.85/348.08 = 26% less performance on Radeon™ Pro WX WX 8200 than on NVIDIA P5000. Performance Differential:256.85/302.86= 15.19% less performance on Radeon™ Pro WX WX 8200 than on NVIDIA P4000. Benchmark Application: SPECviewperf 13 snx-03. AMD Radeon™ Pro WX 8200 score: 304.95 fps. NVIDIA Quadro P5000 score: 423.18 fps. NVIDIA Quadro P4000 score: 318.26 fps. Performance Differential: 304.95/423.18= 28% less performance on Radeon™ Pro WX WX 8200 than on NVIDIA P5000. Performance Differential: 304.95/318.26= 4.18% less performance on Radeon™ Pro WX WX 8200 than on NVIDIA P4000. SPECviewperf 13 sw-04. AMD Radeon™ Pro WX 8200 score: 388.43 fps. NVIDIA Quadro P5000 score: 445.84 fps. NVIDIA Quadro P4000 score: 380.14 fps. Performance Differential: 388.43/445.84= 13% less performance on Radeon™ Pro WX WX 8200 than on NVIDIA P5000. Performance Differential: 388.43/380.14= 2.18% better performance on Radeon™ Pro WX WX 8200 than on NVIDIA P4000. SPECviewperf 13 maya-05. AMD Radeon™ Pro WX 8200 score: 344.45 fps. NVIDIA Quadro P5000 score: 397.29 fps. NVIDIA Quadro P4000 score: 338.61 fps. Performance Differential: 344.45/397.29= 13.3% less performance on Radeon™ Pro WX WX 8200 than on NVIDIA P5000. Performance Differential: 344.45/338.61= 1.72% better performance on Radeon™ Pro WX WX 8200 than on NVIDIA P4000. SPECviewperf 13 3dsmax-06. AMD Radeon™ Pro WX 8200 score:182.93 fps. NVIDIA Quadro P5000 score: 169.93 fps. NVIDIA Quadro P4000 score: 159.02 fps. Performance Differential: 182.93/169.93= 7.6% better performance on Radeon™ Pro WX WX 8200 than on NVIDIA P5000. Performance Differential: 182.93/159.02= 15.03% better performance on Radeon™ Pro WX WX 8200 than on NVIDIA P4000. For more information about SPECviewperf, see https://www.spec.org/benchmarks.html#gwpg. PC manufacturers may vary configurations, yielding different results. Performance may vary based on use of latest drivers. Performance may vary based on use of latest drivers.

Slide 18:

Testing conducted by AMD Performance Labs as of August 7th, 2018 on a BOXX Apex4 system comprising of an AMD Threadripper 1950X, 32GB DDR4 memory, Microsoft® Windows® 10 64-bit OS, AMD Radeon™ Pro WX 8200 graphics, NVIDIA Quadro P5000. AMD Radeon™ Pro internal driver 18.20. NVIDIA driver 391.74. Benchmark Applications: SPECviewperf 13 while simultaneously running Blender Cycles benchmark. SPECviewperf 13 results on AMD Radeon™ Pro WX 8200: 3dsmax-06 = 44.19, catia-05 = 105.72, creo-02 = 68.87, maya-05 = 84.76, snx-03 = 192.20, sw-04 = 72.06. SPECviewperf 13 results on NVIDIA Quadro P5000: 3dsmax-06 = 4.73, catia-05 = 7.15, creo-02 = 6.59, maya-05 = 6.77, snx-03 = 8.54, sw-04 = 6.31. Performance advantage on SPECviewperf 13: 3dsmax-06 = 44.19/4.73 = 9.3x, catia-05 = 105.72/7.15 = 14.7x, creo-02 = 68.87/6.59 = 10.4x, maya-05 = 84.76/6.77 = 12.52x, snx-03 = 192.2/8.54 = 22.5x, sw-04 = 72.06/6.31 = 11.4x. Average performance advantage = 9.3+14.7+10.4+12.52+22.5+11.4/6 = 13x. Blender Cycles Benchmark: WX 8200 time to completion = 87 minutes, Quadro P5000 = 119 minutes. 119/87-1 = 36.7% (1.4x) faster rendering performance than P5000 while running SPECViewperf at the same time. For more information about SPECviewperf, see https://www.spec.org/benchmarks.html#gwpg. PC manufacturers may vary configurations, yielding different results. Performance may vary based on use of latest drivers. Performance may vary based on use of latest drivers

ENDNOTES

Slide 19:

Spider chart represents the averages of previous individual tests grouped by rendering, media and entertainment, manufacturing, and VR. Refer to end notes for slide 12, 13, 14, and 19 for full results. For multitasking workload result, refer to end note from slide 18.

Slide 20:

Testing conducted by AMD Performance Labs as of August 1st, 2018, on a test system comprising of Intel E5-1650 v3, 16GB DDR4 system memory, Samsung 850 PRO 512GB SSD, Windows® 10 Enterprise 64-bit, Radeon™ Pro WX 8200, NVIDIA Quadro P4000, NVIDIA Quadro P5000. List price on newegg.com as of August 3rd, 2018, P4000 = $849.97. P5000 = $1885. Expected SEP of $999 for the WX 8200. AMD graphics driver 18.20-180713a, NVIDIA graphics driver 391.74. Class is defined as professional graphics cards with etail pricing under $1,000. Performance based on the following benchmark results. Benchmark Application: VRMark, Cyan Room. AMD Radeon™ Pro WX 8200 score: 6979. NVIDIA Quadro P5000 score: 6351. NVIDIA Quadro P4000 score: 4550. Performance Differential: 6979/6351 = 9.9% performance than the P5000. Performance Differential: 6979/4550= 53.38% better performance on Radeon™ Pro WX WX 8200 than on NVIDIA P4000. Benchmark Application: Foundry Nuke 11, Denoise and Motion Blur Benchmark. AMD Radeon™ Pro WX 8200 score: 29 seconds. NVIDIA Quadro P5000 score: 36 seconds. NVIDIA Quadro P4000 score: 40 seconds. Performance Differential: 1-29/36 = 19.4% better score on Radeon™ Pro WX WX 8200 than on NVIDIA P5000. Performance Differential: 1-29/40 = 27.5% better score on Radeon™ Pro WX WX 8200 than on NVIDIA P4000. Benchmark Application: Adobe Premiere Pro. AMD Radeon™ Pro WX 8200 score: 752 seconds. NVIDIA Quadro P5000 score: 897 seconds. NVIDIA Quadro P4000 score: 1825 seconds. Performance Differential: 1-752/897 = 16% better score on Radeon™ Pro WX WX 8200 than on NVIDIA P5000. Performance Differential: 1-752/1825 = 58.79% better score on Radeon™ Pro WX WX 8200 than on NVIDIA P4000. Benchmark Application: Autodesk Maya 2017. AMD Radeon™ Pro WX 8200 score: 7.92. NVIDIA Quadro P5000 score: 7.64. NVIDIA Quadro P4000 score: 7.55. Performance Differential: 7.92/7.64= 3.6% better score on Radeon™ Pro WX WX 8200 than on NVIDIA P5000. Performance Differential: 7.92/7.55= 4.9% better score on Radeon™ Pro WX WX 8200 than on NVIDIA P4000. Benchmark Application: Radeon™ ProRender. AMD Radeon™ Pro WX 8200 score: 39 seconds. NVIDIA Quadro P5000 score: 48 seconds. NVIDIA Quadro P4000 score: 58 seconds. Performance Differential: 1-39/48 = 18.75% better score on Radeon™ Pro WX WX 8200 than on NVIDIA P5000. Performance Differential: 1-39/58 = 32.76% better score on Radeon™ Pro WX WX 8200 than on NVIDIA P4000. Benchmark application: Blender Cycles 2.7.9 – “Pavillon Barcelone” Scene. AMD Radeon™ Pro WX 8200 score: 405 seconds. NVIDIA Quadro P5000 score: 506 seconds. NVIDIA Quadro P4000 score: 584 seconds. Performance Differential: 1-405/506 = 20% better score on Radeon™ Pro WX WX 8200 than on NVIDIA P5000. Performance Differential: 1-405/584 = 30.6% better score on Radeon™ Pro WX WX 8200 than on NVIDIA P4000. PC manufacturers may vary configurations, yielding different results. Performance may vary based on use of latest drivers. Performance may vary based on use of latest drivers.

Slide 21:

Spider chart represents the averages of previous individual tests grouped by rendering, media and entertainment, manufacturing, and VR. Refer to end notes for slide 12, 13, 14, and 19 for full results. For multitasking workload result, refer to end note from slide 18.