Intel® Core™ Ultra Processors

it starts with intel.

Design Goals

Intel® Core™ Ultra Processors

Reimagined **Efficiency**

Our most power efficient client processor ever

Launch **Intel 4** Process

New P- & E-cores with landmark chip packaging

~2X **GPU** Performance

With increased power efficiency

Lead **AI at Scale**

Enabling more ISVs and user experiences

Learn more at www.intel.com/PerformanceIndex.

Leadership Goals Delivered

Intel® Core™ Ultra Processors

3D Performance Hybrid	The most efficient x86 processor for ultrathin systems[1]
Intel 4	CPU core performance leadership for ultrathin systems[2]
Intel® Arc™ GPU[3]	World-class GPU performance for ultrathin PCs
AI	Over 100 ISVs and 300 ISV features for unmatched scale in AI PC experiences

1, 2. Among processors powering ultrathin systems (≤28W processor base power, without discrete GPU), based on SPECrate*2017_int_base (n-copy) (fn1) power and performance estimates and (fn2) performance estimates for Intel® Core™ Ultra 7 165H on an Intel Internal development system with Intel Compiler 2023. 2.3 and in comparison to prior gen and comp, as of December 2023.
3. Intel® Arc™ graphics only available on select H-series Intel® Core™ Ultra processor-powered systems. Other system configurations feature Intel® Graphics.
Details at intel.com/performanceindex. Results may vary.

Intel® Core™ Ultra Processors

3D Performance Hybrid Architecture with Foveros

Intel 4 Compute Tile Up to 6x P-cores 8x E-cores 2x LP E-cores 22 Threads

Up to **5.1GHz** Max Turbo

Built-In **Intel® Arc™ GPU**[1] with up to **8 Xᵉ-cores**

Dedicated NPU with *n*-Stream Execution

Up to 64GB LPDDR5(x)-7467 / 96GB DDR5-5600

Thunderbolt™ 4

Integrated Intel® Wi-Fi 6E (Gig+)

1. Intel® Arc™ GPU available on select H-series Intel® Core™ Ultra processor-powered systems. Other system configurations feature Intel® Graphics. Details at intel.com/performanceindex. Results may vary.

The Most Efficient x86 Processor

for Ultrathin Systems

Among processors powering ultrathin systems, based on SPECrate*2017_int_base (n-copy) power and performance estimates for Intel® Core™ Ultra 7 165H on an Intel Internal development system with Intel Compiler 2023. 2.3 and in comparison to prior gen and comp; as of December 2023. Details at intel.com/performanceindex.

Intel 4

Logic process technology

2x
area scaling
for High Perf Logic library vs Intel 7

EUV
lithography for process simplification

>20%
power efficiency[1]

8VTs
for CPU optimization

High-density MIM
for Power Delivery

1. Based on internal estimates.
Details at www.intel.com/PerformanceIndex. Results may vary.

3D Performance Hybrid Architecture Vision

Optimize power efficiency while delivering best adaptive performance

Intel® Thread Director
hardware that provides feedback to OS for optimal scheduling decisions

Symmetric ISA
exposed to OS as individual logical processors with capabilities enumerated

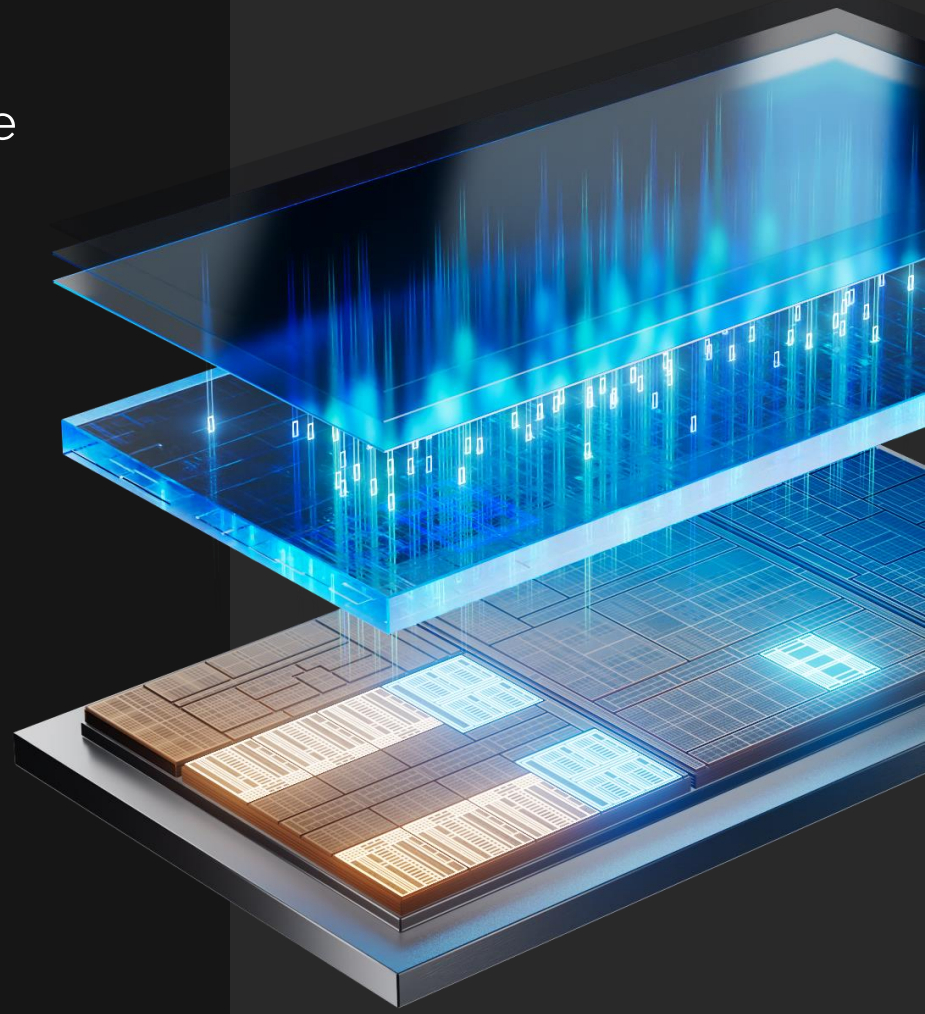
Optimized OS Scheduler
unlocks great performance benefits

+

Compute Tile
new P-cores and E-cores significantly raise perf/W in active execution

Low Power Island
provide low power and energy efficiency for parasitic background tasks

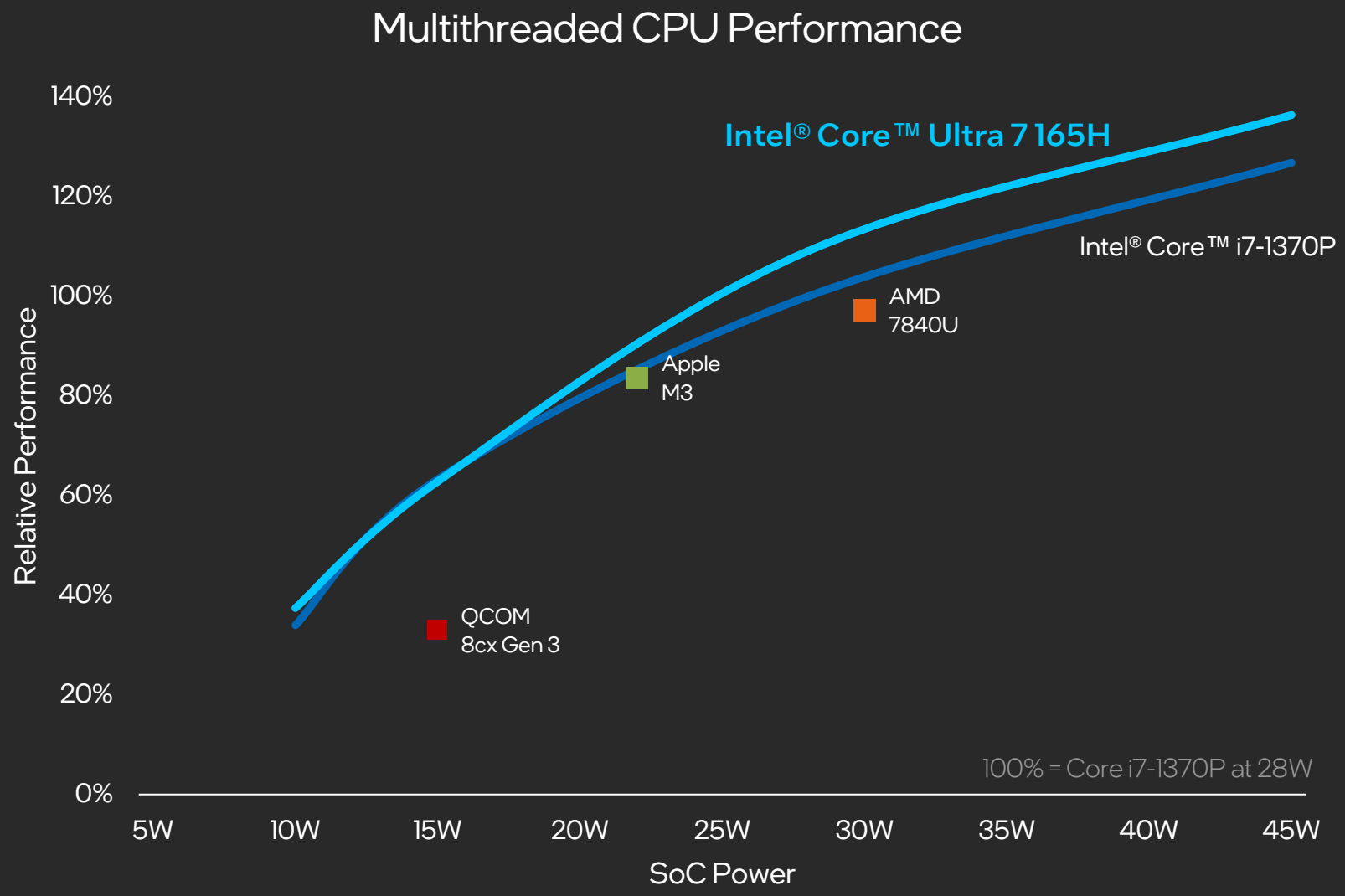
Disaggregated Tiles
optimize energy efficiency across diverse IP types



Intel® Core™
Ultra Processors

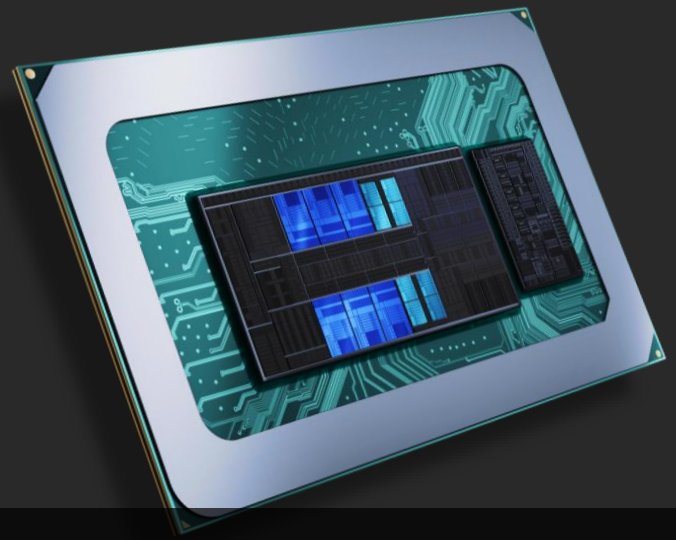
Leadership CPU Compute for Ultrathin PCs

Up to 11% faster than AMD Ryzen at similar power



Among processors powering ultrathin systems, based on SPECrate*2017_int_base (n-copy) power and performance estimates for Intel® Core™ Ultra 7 165H on an Intel Internal development system with Intel Compiler 2023. 2.3 and in comparison to prior gen and comp; as of December 2023. Details at intel.com/performanceindex. Results may vary.

Intel® Core™ i7-1370P



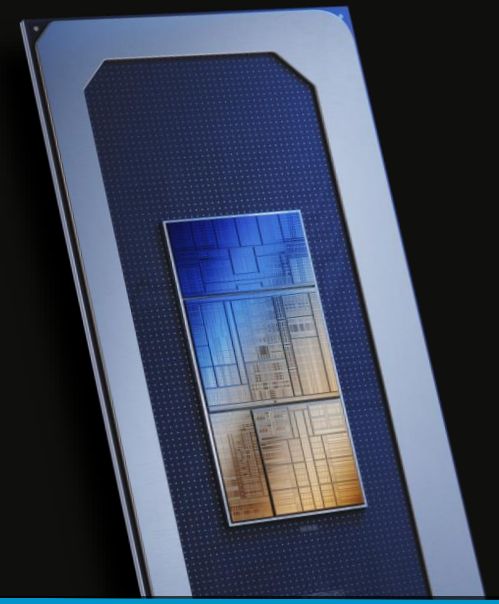
~1540mW

Netflix video playback with
P- and E-cores

25%

reduction in power
consumption[1]

Intel® Core™ Ultra 7 165H



~1150mW

Netflix video playback with
LP E-cores in SoC tile

1. Learn more at www.intel.com/PerformanceIndex. Results may vary.

Broad Spectrum Power Leadership

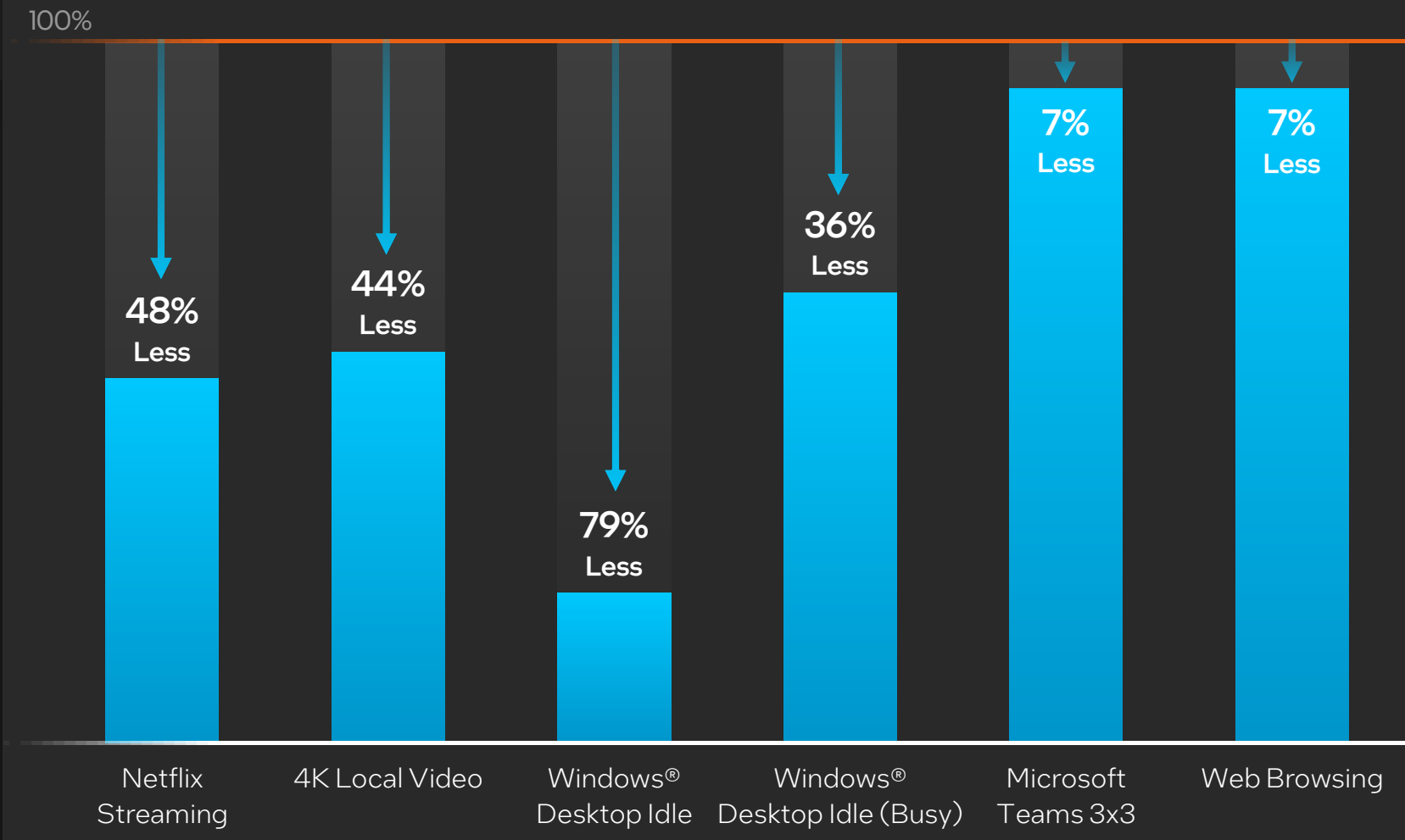
Up to

79%

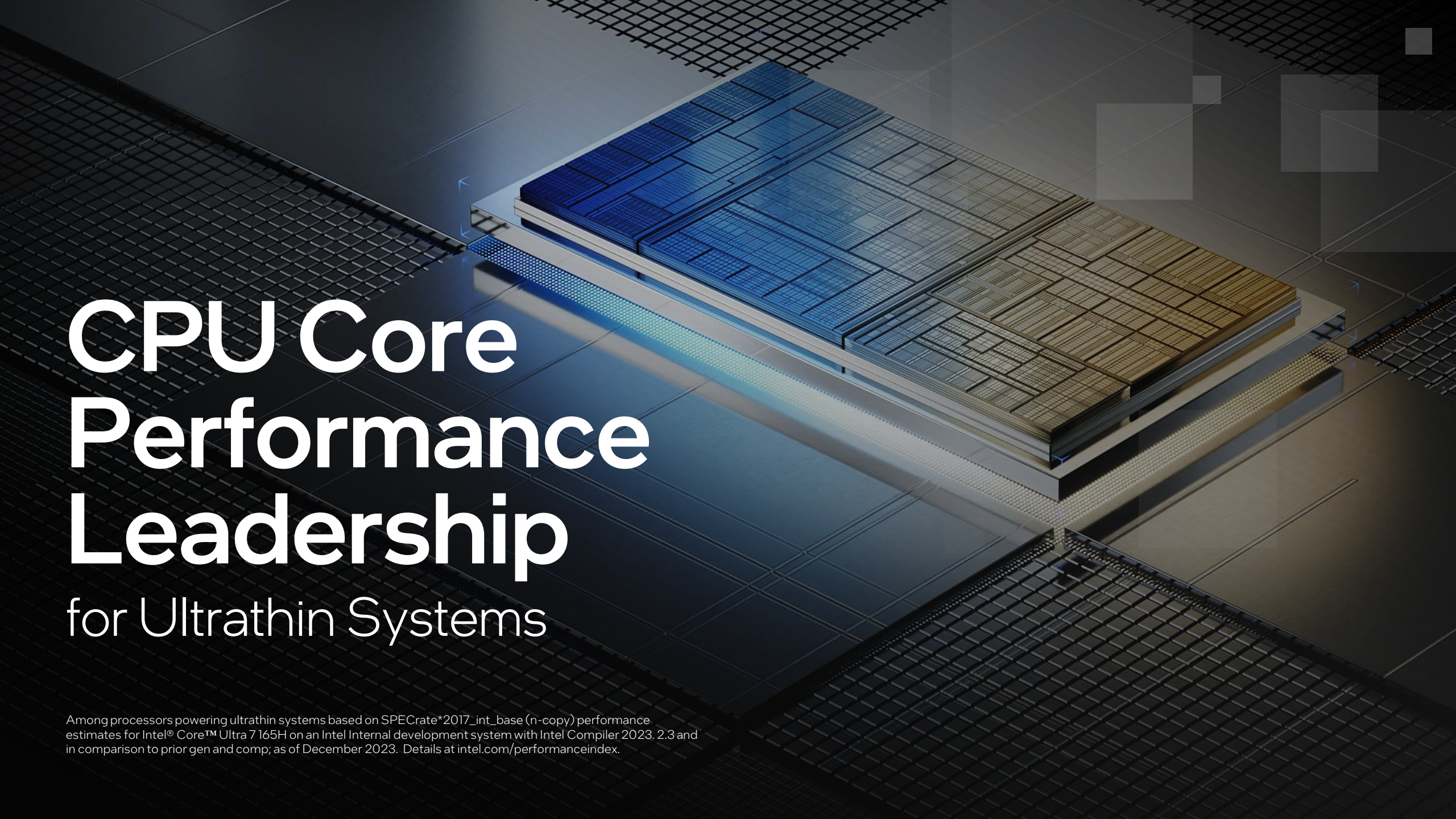
Lower power than AMD at the same 28W envelope for ultrathin notebooks[1]

AMD Ryzen 7 7840U

intel Intel® Core™ Ultra 7 165H



1. Learn more at www.intel.com/PerformanceIndex. Results may vary.



Among processors powering ultrathin systems based on SPECrate*2017_int_base (n-copy) performance estimates for Intel® Core™ Ultra 7 165H on an Intel Internal development system with Intel Compiler 2023. 2.3 and in comparison to prior gen and comp; as of December 2023. Details at intel.com/performanceindex.

Compute Tile

NEW

CRESTMONT

E-core

Higher throughput and new VNNI acceleration

NEW

REDWOOD COVE

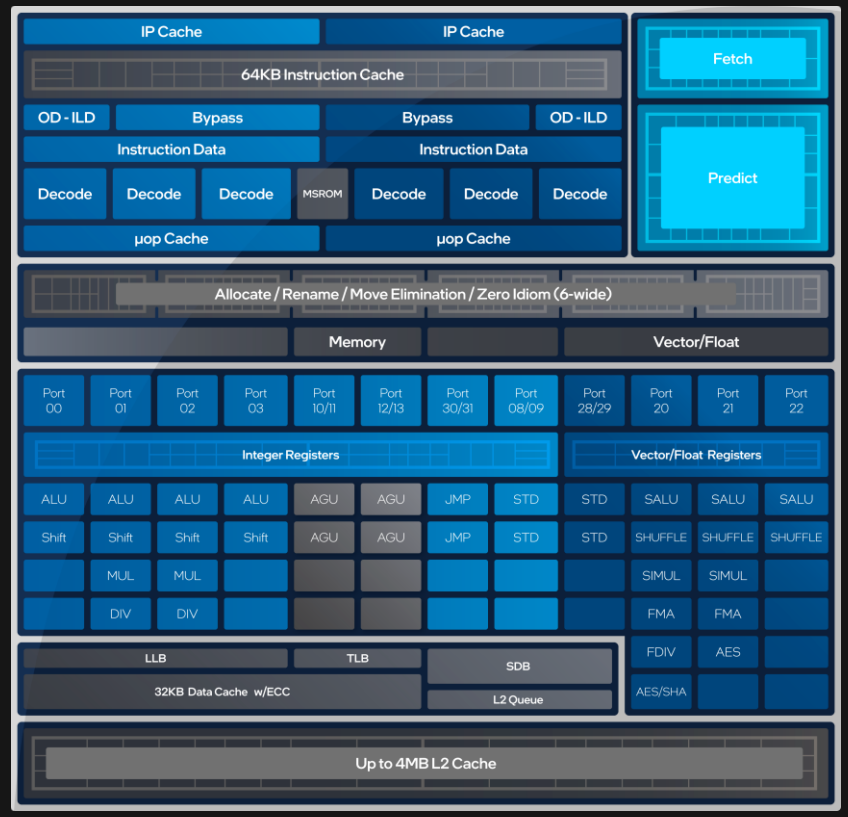
P-core

Dramatic perf/W optimizations for ultrathin

CRESTMONT

E-core

Significant improvements over prior E-core



IPC gains
over prior E-cores

Enhanced
branch prediction

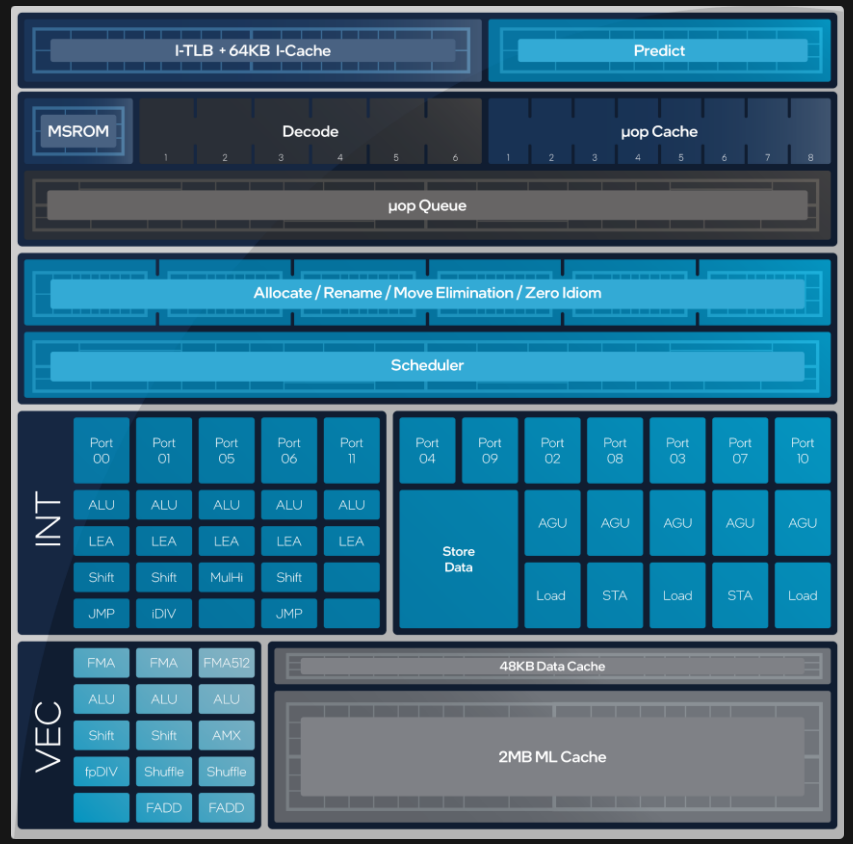
Enhanced feedback
Intel® Thread Director

AI acceleration
VNNI, ISA improvements

REDWOOD COVE

P-core

Targeted for efficient performance



Improved
performance efficiency

Enhanced
branch prediction

Increased bandwidth
per core package

Improved feedback
Intel® Thread Director

Leadership Compute Performance

Plus generational improvements in performance-per-watt[1]

VS **Intel® Core™ i7-1370P**

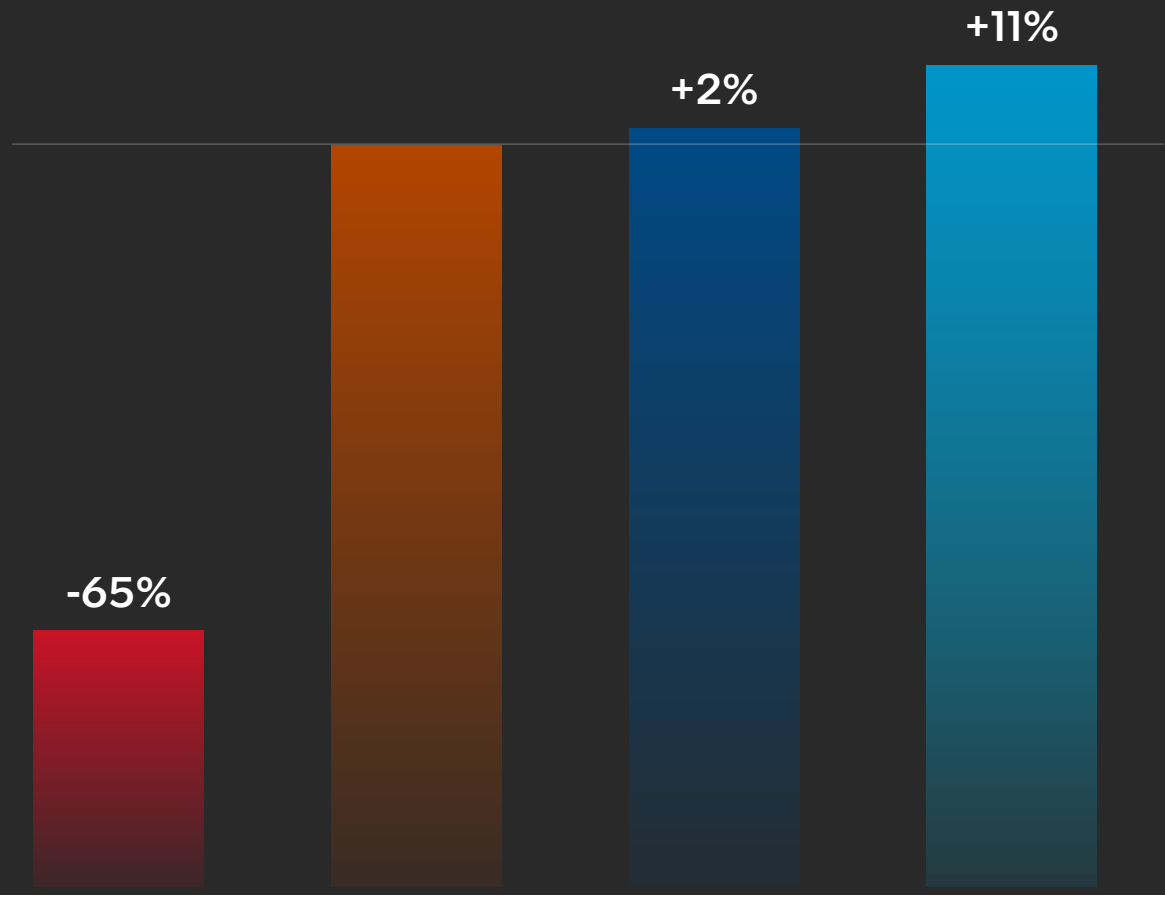
+8% Performance

Similar Power

VS **Ryzen 7840U**

+11% Performance

Similar Power



1. Among processors powering ultrathin systems, based on SPECrate*2017_int_base (n-copy) power and performance estimates for Intel® Core™ Ultra 7 165H on an Intel Internal development system with Intel Compiler 2023. 2.3 and in comparison to prior gen and comp; as of December 2023.

All figures tested on AC with Windows® "Best Performance" setting. Details at intel.com/performanceindex for details. Results may vary.

Leadership CPU Core Performance

With transformative power, AI, GPU, and packaging technologies vs. 13th Gen Intel® Core™ processors

Intel 4

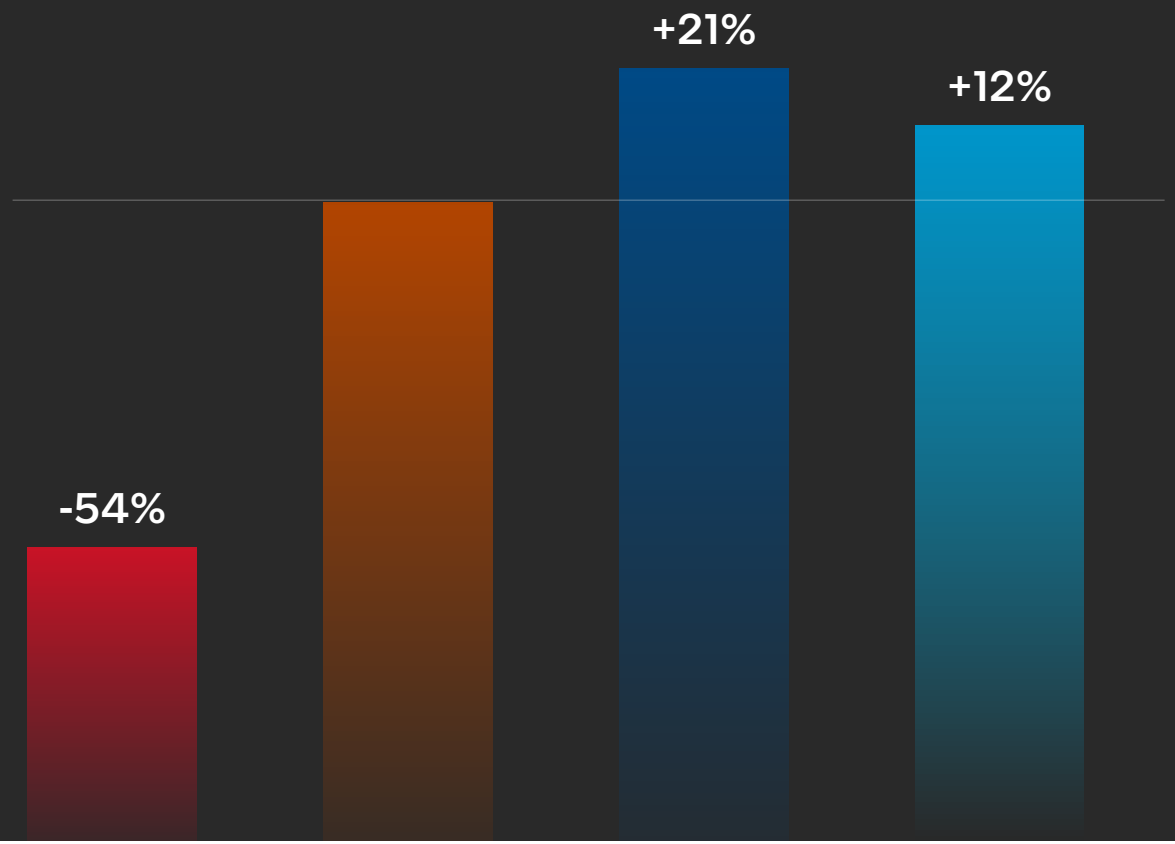
Outperforming competing µarch with Redwood Cove P-core

VS

Ryzen 7840U

+12% Performance

1T CPU Performance

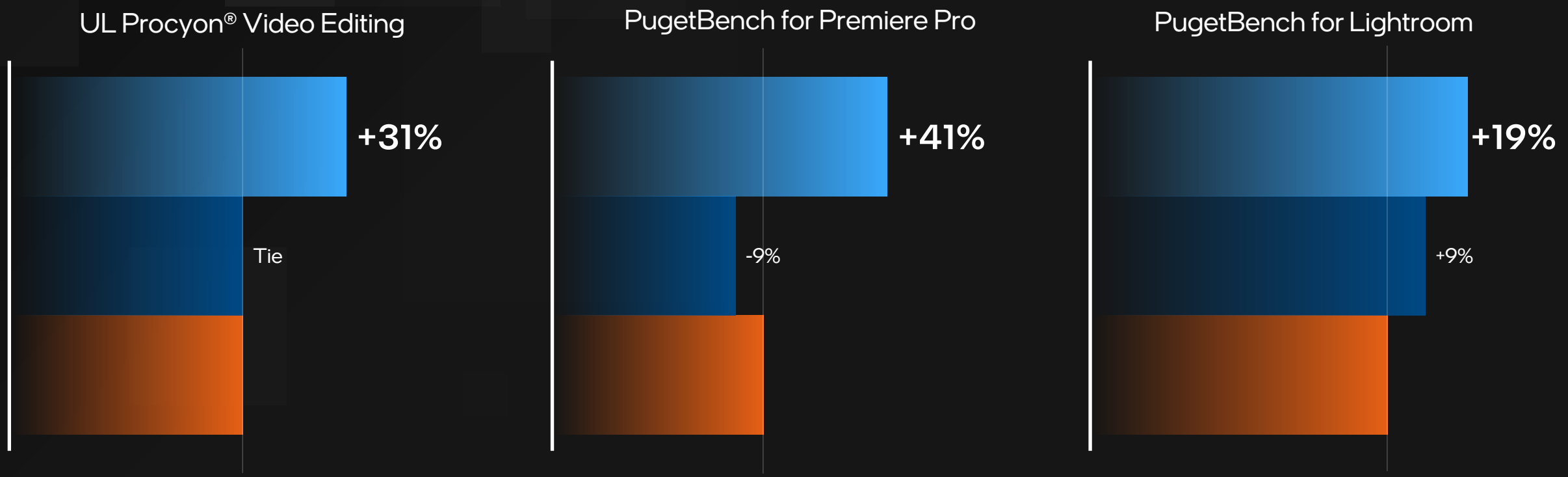


1. Among processors powering ultrathin systems, based on SPECrate*2017_int_base (1-copy) performance estimates for Intel® Core™ Ultra 7 165H on an Intel Internal development system with Intel Compiler 2023. 2.3 and in comparison to prior gen and comp; as of December 2023.

All figures tested on AC with Windows® "Best Performance" setting. Details at intel.com/performanceindex for details. Results may vary.

A **Multimedia Powerhouse**

Intel® Core™ Ultra processors lead at work

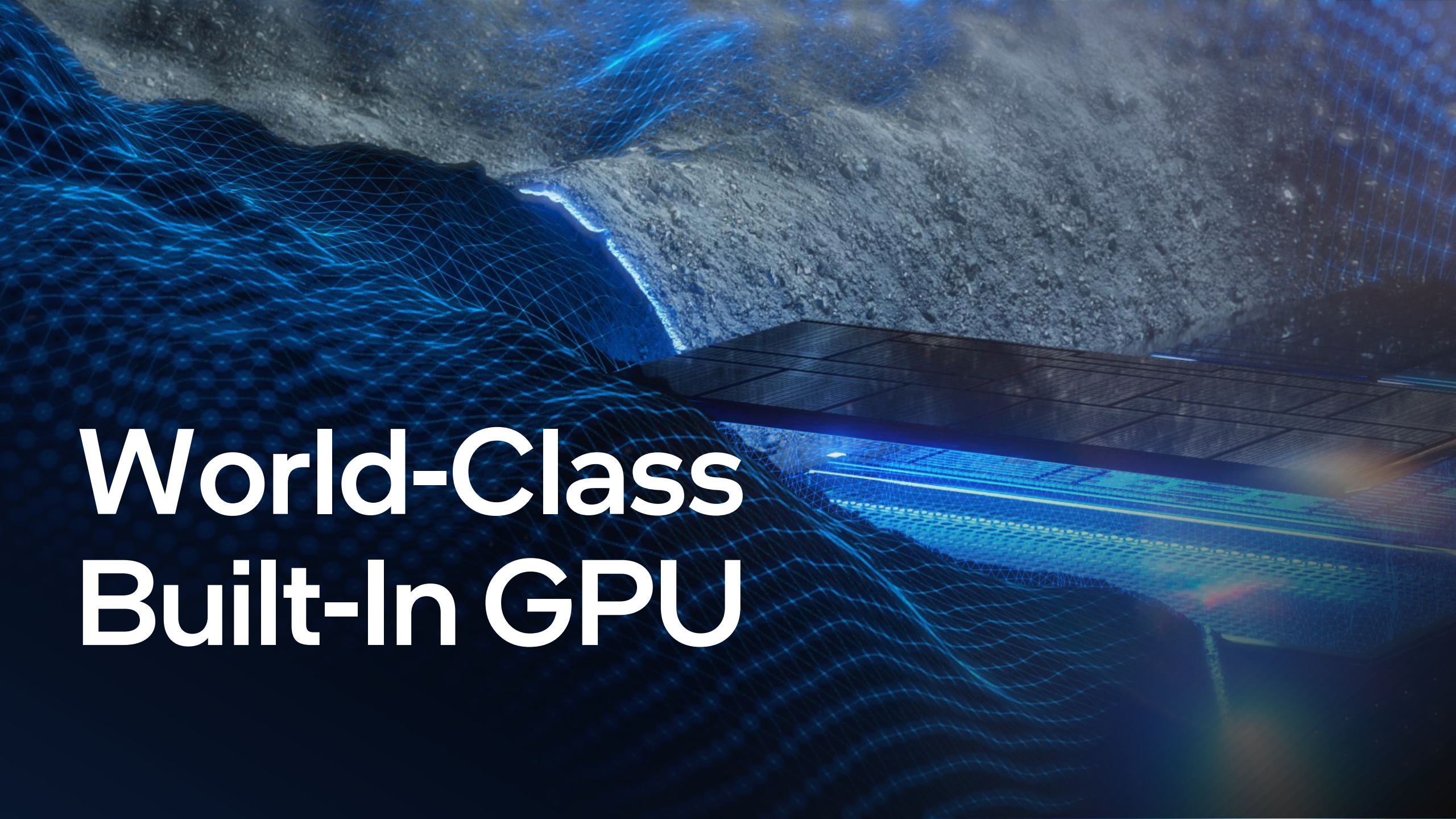


ASUS Zenbook 14
Intel® Core™ Ultra 7 155H

ASUS Zenbook 14 Flip
Intel® Core™ i7-1360P

ASUS Zenbook S 13
AMD Ryzen 7 7840U

* All figures tested on AC with Windows® "Best Performance" setting. Learn more at www.intel.com/PerformanceIndex. Results may vary.


World-Class
Built-In GPU

Intel® Arc™ GPU

Built-In Modern GPU

New Xe LPG Architecture

~2x perf and ~2x perf/w vs. previous gen[1]

DX12 Ultimate Support

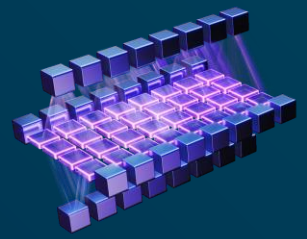
Full feature set with HW ray tracing and mesh shading

Advanced Media Engine

AV1, H.265, H.264, VP9 Encode up to 8K 10b HDR

Cutting-Edge Display Engine

4x Displays, HDMI® 2.1, DP™ 2.1 20G, eDP 1.4b



DP4A Engine

Sustained AI accelerator for INT8 inferencing

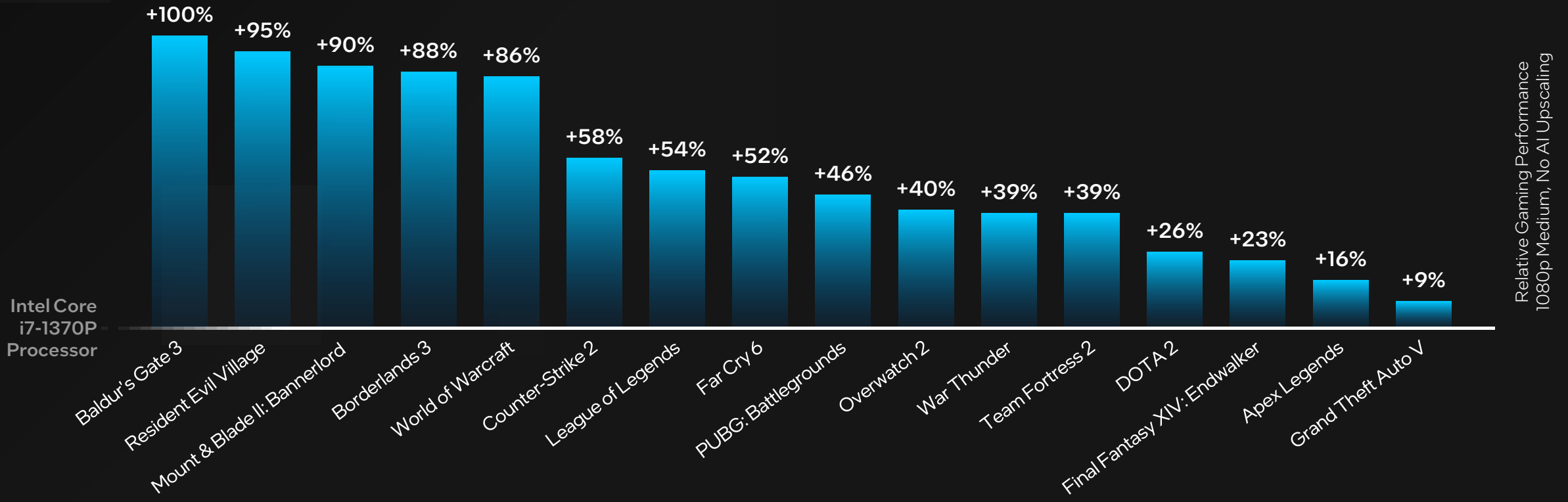
Xe Super Sampling

AI-Based high-performance upscaling

Intel® Arc™ GPU available on select H-series Intel® Core™ Ultra processor-powered systems. Other system configurations feature Intel® Graphics.

1. Based on higher average FPS measured on Baldur's Gate 3 compared to prior gen. Details at intel.com/performanceindex. Results may vary.

Up to **2X Faster Graphics Performance** than 13th Gen Intel® Core™ i7 Processor at 28W[1]



1. Based on Intel® Core™ Ultra 7 165H performance with built-in Intel® Arc™ GPU . Details at intel.com/performanceindex.

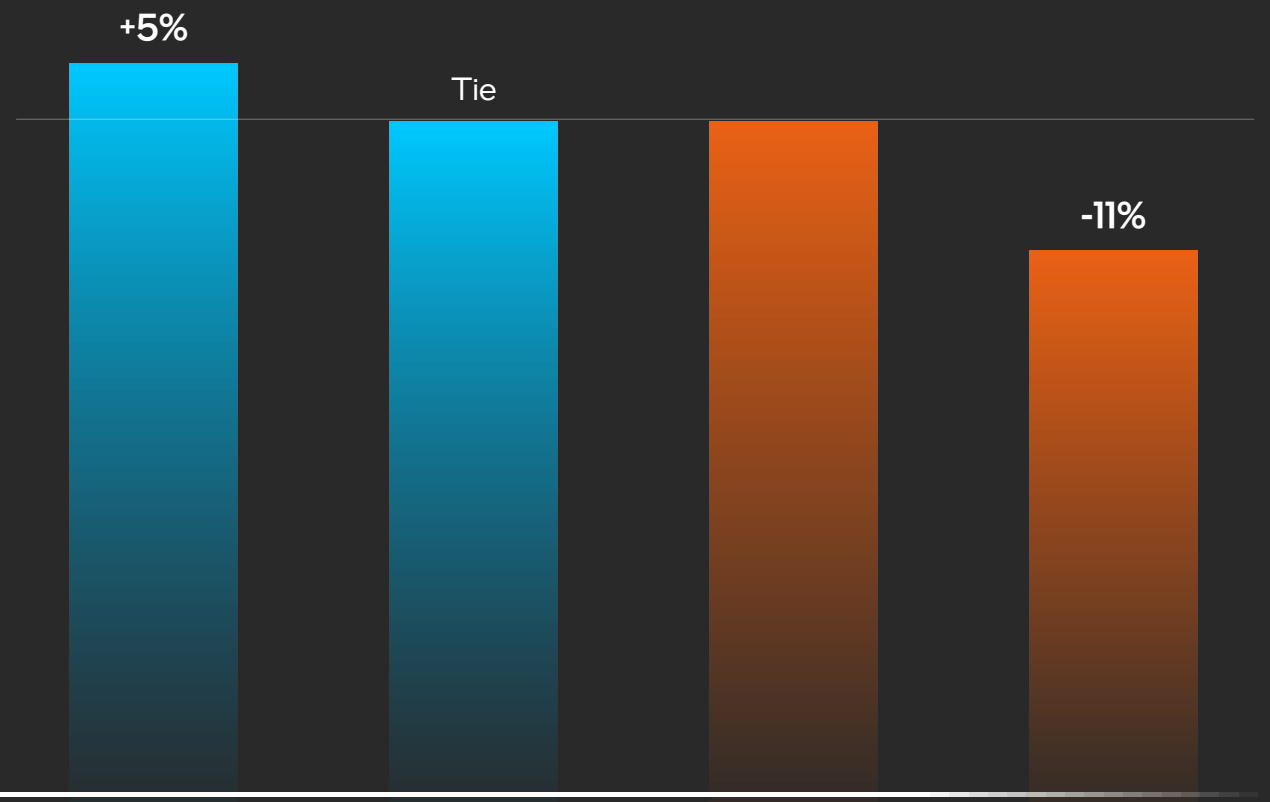
World-Class Graphics Performance for Ultrathin Systems

Across an average of 18 games at native 1080p

Apex Legends	League of Legends
Baldur's Gate 3	Mount & Blade II: Bannerlord
Borderlands 3	Overwatch 2
Counter-Strike 2	PUBG: Battlegrounds
DOTA 2	Resident Evil Village
Far Cry 6	Team Fortress 2
Final Fantasy XIV	Valorant
Fortnite	War Thunder
Grand Theft Auto V	World of Warcraft

Relative Gaming Performance

1080p + Medium Image Quality



AI-based Rendering with XeSS

Increased **Performance**

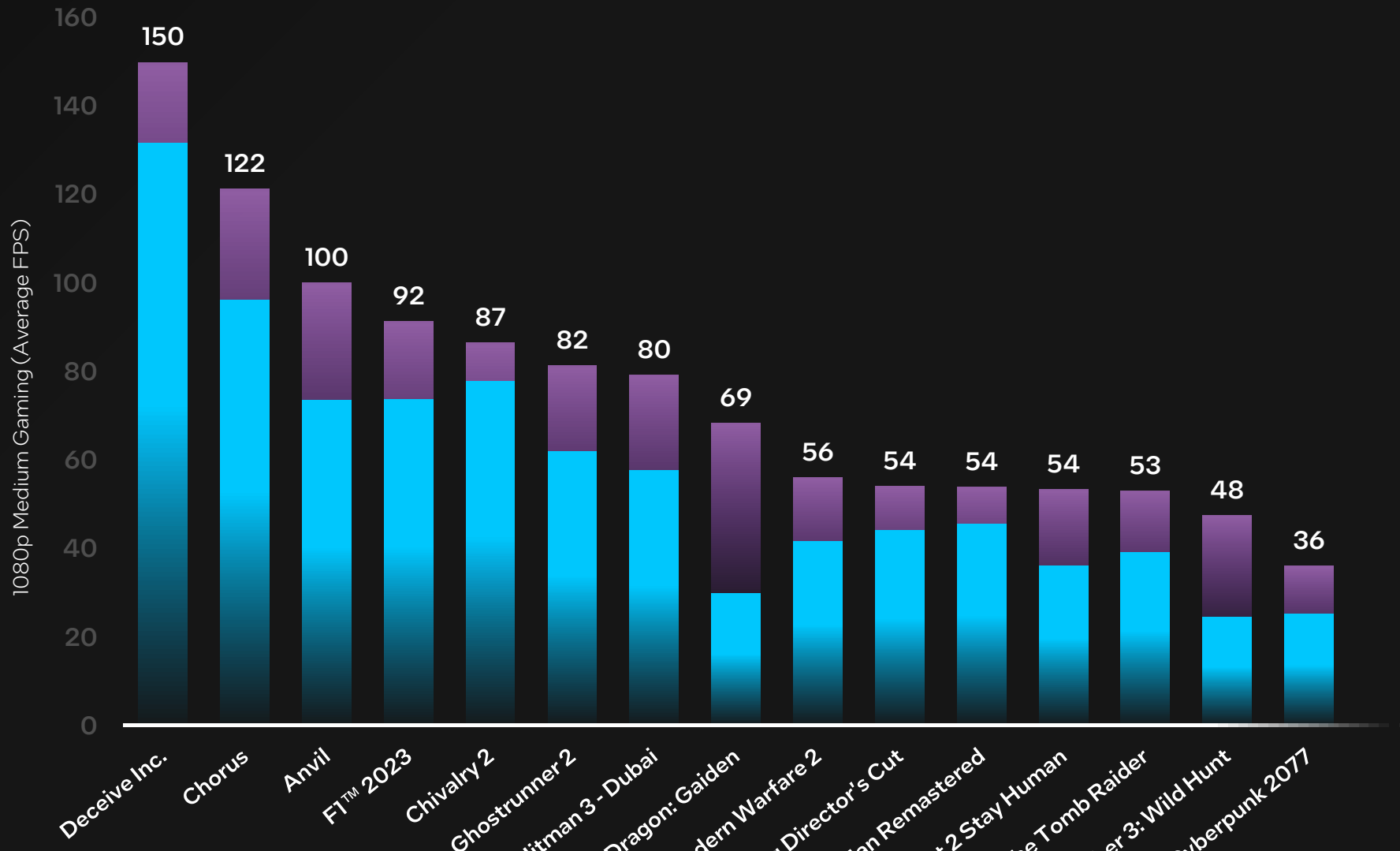
Increased **Power Efficiency**

Image for illustrative purposes only.

Average

39%

Performance Uplift at 1080p[1] with XeSS



Intel® Core™ Ultra 7 165H XeSS FPS Gain (Avg)

Intel® Core™ Ultra 7 165H Native 1080p FPS (Avg)

1. Learn more at www.intel.com/PerformanceIndex. Results may vary.

intel CORE ULTRA

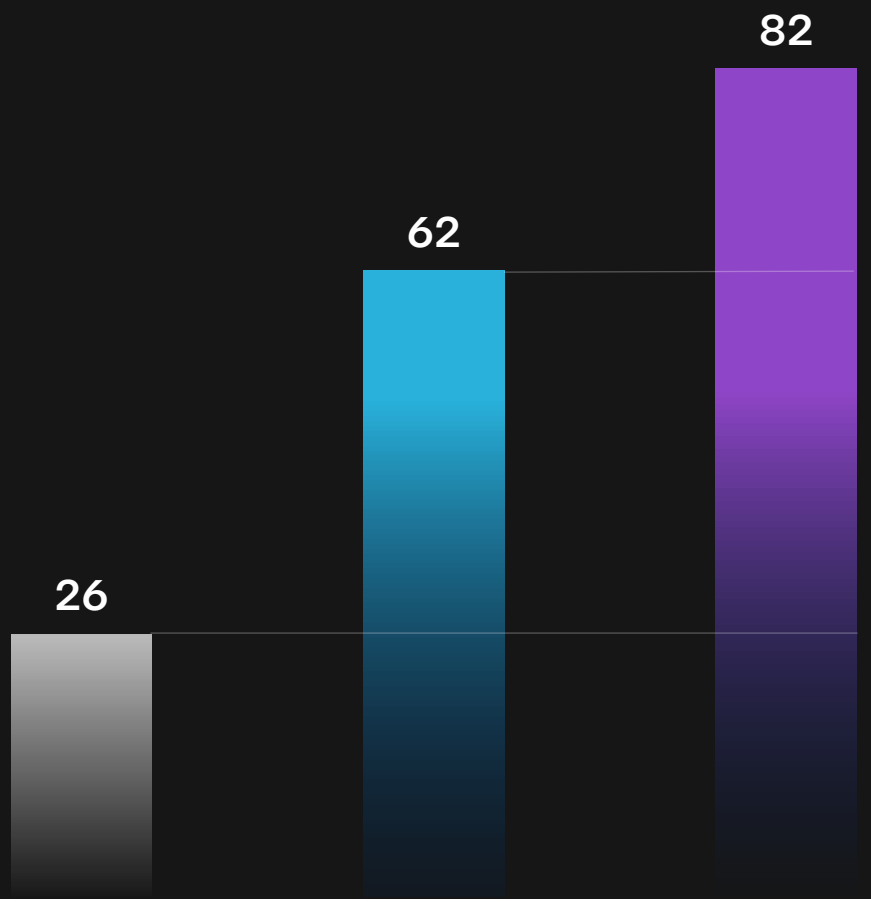
intel ARC GRAPHICS

up to
3x
Faster 1080p gaming

up to
3x
More power efficient

Gaming Performance

1080p Medium - Average FPS



Learn more at www.intel.com/PerformanceIndex. Results may vary.

The Best AI PC Experience

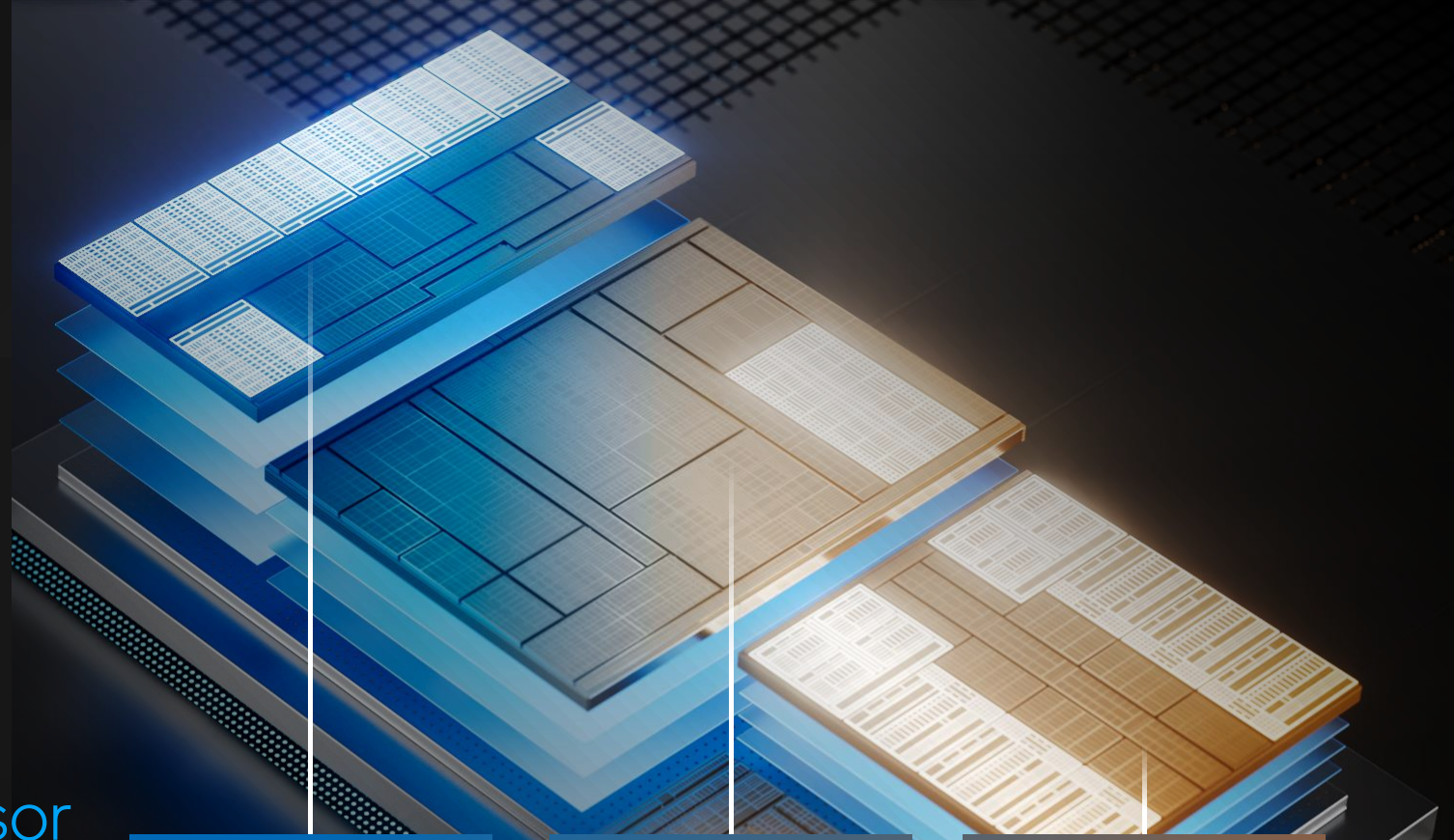
Based on the broad compatibility, extensive software options, unique architecture, and impressive performance of Intel® Core™ Ultra processors that combine to deliver the best overall AI experience, including in comparison to comp (as of December 2023). AI features may require additional purchase or specific compatibility requirements. Details at intel.com/performanceindex. Results may vary.

Three AI Engines

with Intel® Core™ Ultra Processor

Heterogenous execution of AI workloads embraces the best practices in AI software design

Deliver up to **34 TeraOPS**[1]



GPU

High Throughput
Ideal for AI-accelerated digital content creation

NPU

Low Power
Ideal for sustained AI workloads and AI offload for battery life

CPU

Fast Response
Ideal for low-latency AI workloads

1. Based on Intel® Core™ Ultra 7 165H processor combined TOPS of CPU, GPU, and NPU engines.

Unmatched Consumer & Commercial Investment for Client AI

intel.com/aipc

100+ Million

AI accelerators (in client) through 2025

100+ ISV Partners 300+ ISV Features

Largest library of user AI software of all PC processor vendors

Broad Compatibility

Leader in performantly and reliably executing a wide range of AI software

Easiest Developer Support with OpenVINO

Effortlessly multi-device, multi-engine, multi-vendor

Dedicated Development and Engineering Staff

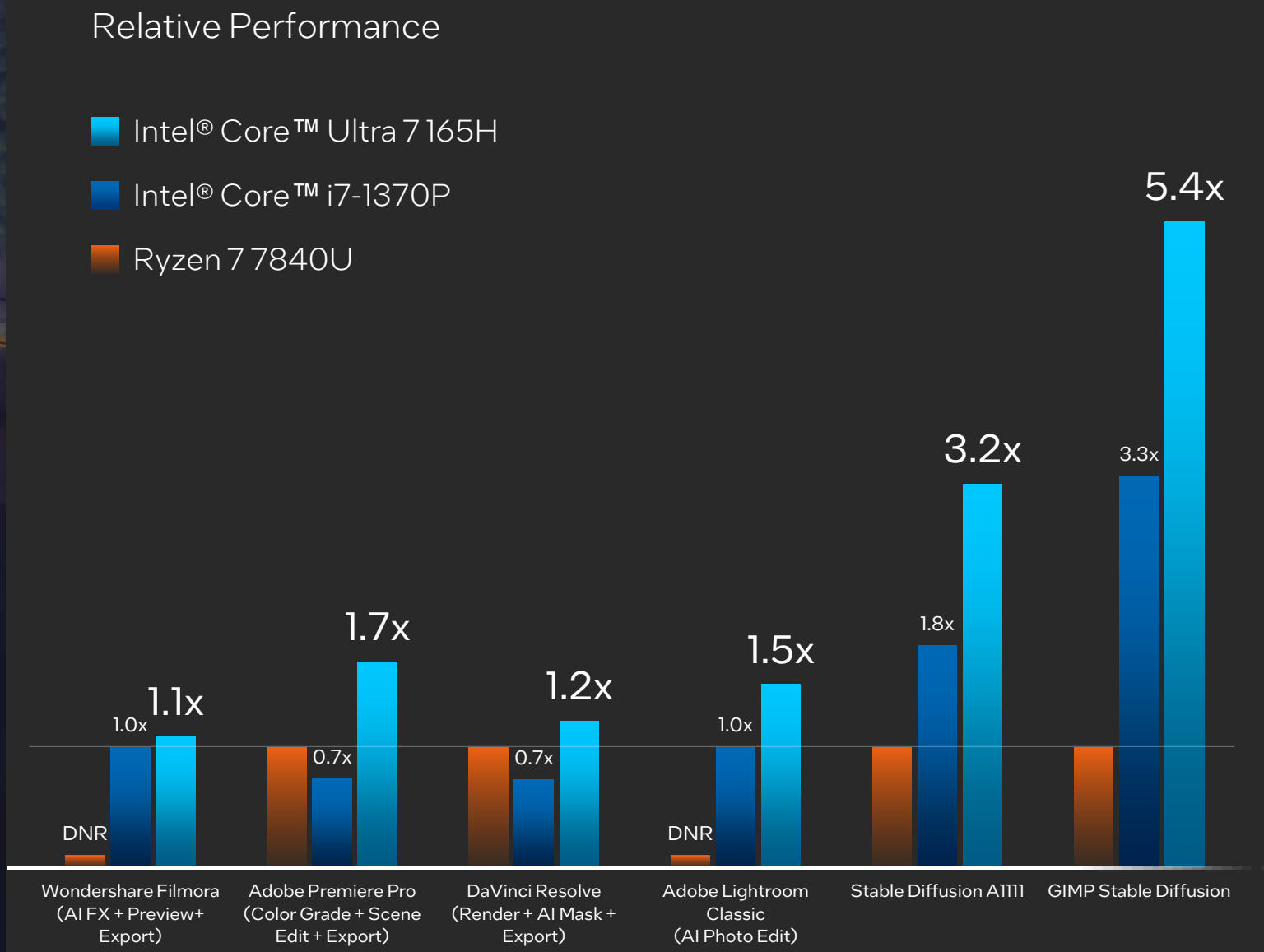
Deep bench of support for AI software partners

Open and Cross-Vendor Standards

First to support Microsoft DirectML

AI Application Performance for Creators

Intel® Core™ Ultra processor and the built-in Intel® Arc™ GPU[1] demonstrate winning AI software performance in creative workflows



Learn more at www.intel.com/PerformanceIndex. Results may vary.
1. Intel® Arc™ GPU only available on select H-series Intel® Core™ Ultra processor-powered systems. Other system configurations feature Intel® Graphics.

AI Transformative Experiences

AI software utilizes new algorithms that require new hardware approaches for peak efficiency.

Intel® Core™ Ultra processors utilize three dedicated AI accelerators to deliver significant performance and efficiency improvements versus the previous generation.

1.7x
Generative AI Performance
Stable Diffusion A1111
(Built-in GPU offload)

38%
Lower Power in Video Calls
Zoom
(NPU offload)

2.5x
Int8 Power Efficiency
UL Procyon® AI
(NPU offload, int8)

Intel® Core™ Ultra 7 165H v. Intel® Core™ i7-1370P

Details at intel.com/performanceindex. Results may vary

AI

Broad Engine and Data Type Leadership

OpenVINO™ enables consistent AI performance across engines with Intel® Core™ Ultra processors

	NPU FP16	NPU Int8	GPU FP16	GPU Int8	CPU FP16	CPU Int8
Intel® Core™ Ultra 7 Processor 165H OpenVINO Framework	●	●	●	●	●	●
Ryzen 7 7840U WinML Framework	X	X	▲	▲	▲	▲
Snapdragon 8cx Gen 3 SNPE Framework (NPU) WinML (CPU+GPU)	X	●	X	X	▲	▲

● Performant ▲ Non-Performant X Did Not Run

Testing as of 06 December 2023 in UL Procyon® AI Inference Test. Learn more at www.intel.com/PerformanceIndex. Results may vary. Non-performant results are defined as performance figures that are substandard to IP and framework performance demonstrated by the Intel® Core™ Ultra 7 165H processor.

GenAI Ready

Intel® Core™ Ultra processors run the latest LLMs, transformers, and text-to-image workloads – helping you be more productive and creative

Models

BERT
Whisper
LLaMA
ChatGLM
Stable Diffusion
Dolly
>80 in total

Quantization Tools

OpenVINO™ Neural Network Compression Framework
Intel® Neural Compressor
Hugging Face Auto GPTQ
ONNX RT Quantization

Frameworks

OpenVINO™
ONNX
WindowsML
DirectML
WebAssembly
WebNN (Dev preview)
WebGPU
Hugging Face Optimum (OpenVINO backend)
PyTorch (OpenVINO backend)
Olive

Applications

Audacity
GIMP
Microsoft 365
Superpower
...and more to come

AI features may require additional purchase or specific compatibility requirements. Learn more at intel.com/aipc.

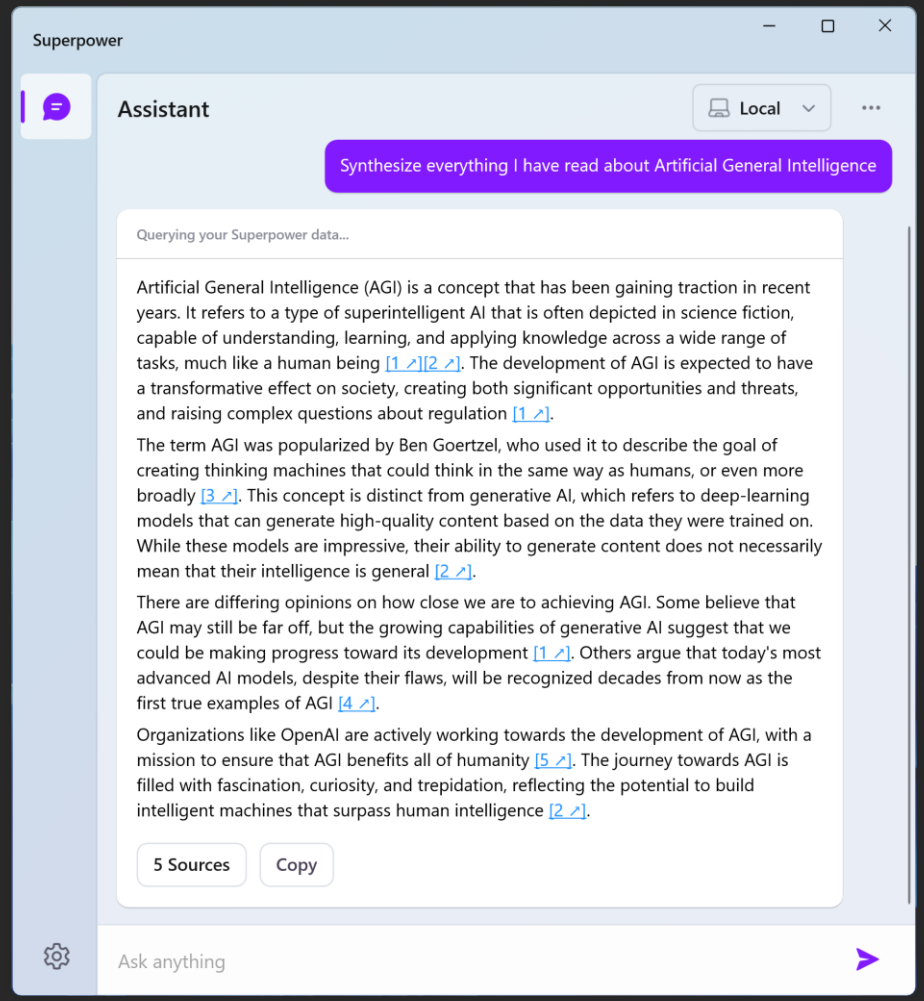
Now Running
Local LLaMa2-7B

Offline productivity assistance LLM executing on CPU+GPU+NPU and Whisper Encoder on NPU

intel CORE ULTRA

superpower.us

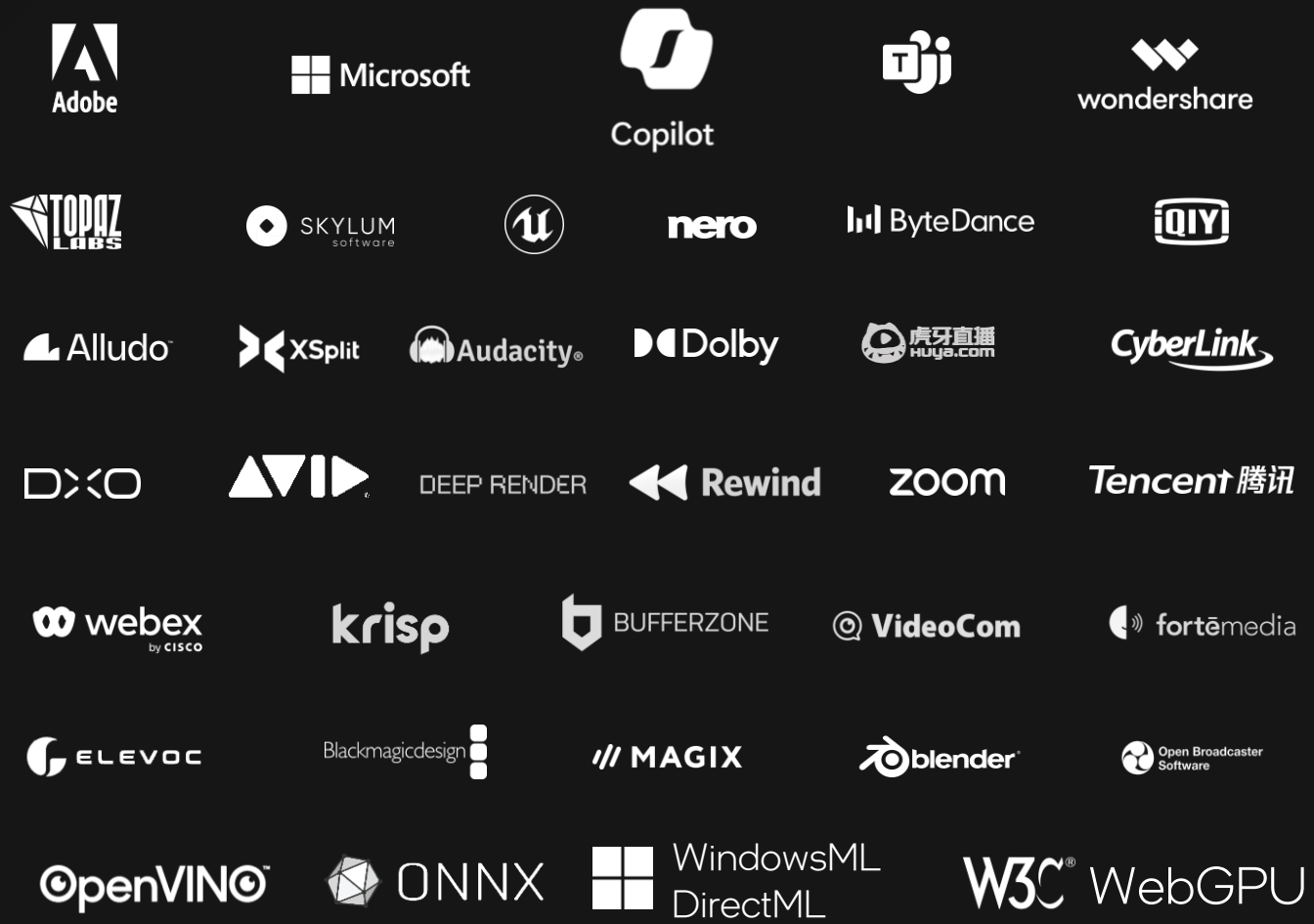
Superpower



The **“killer app”** is choice

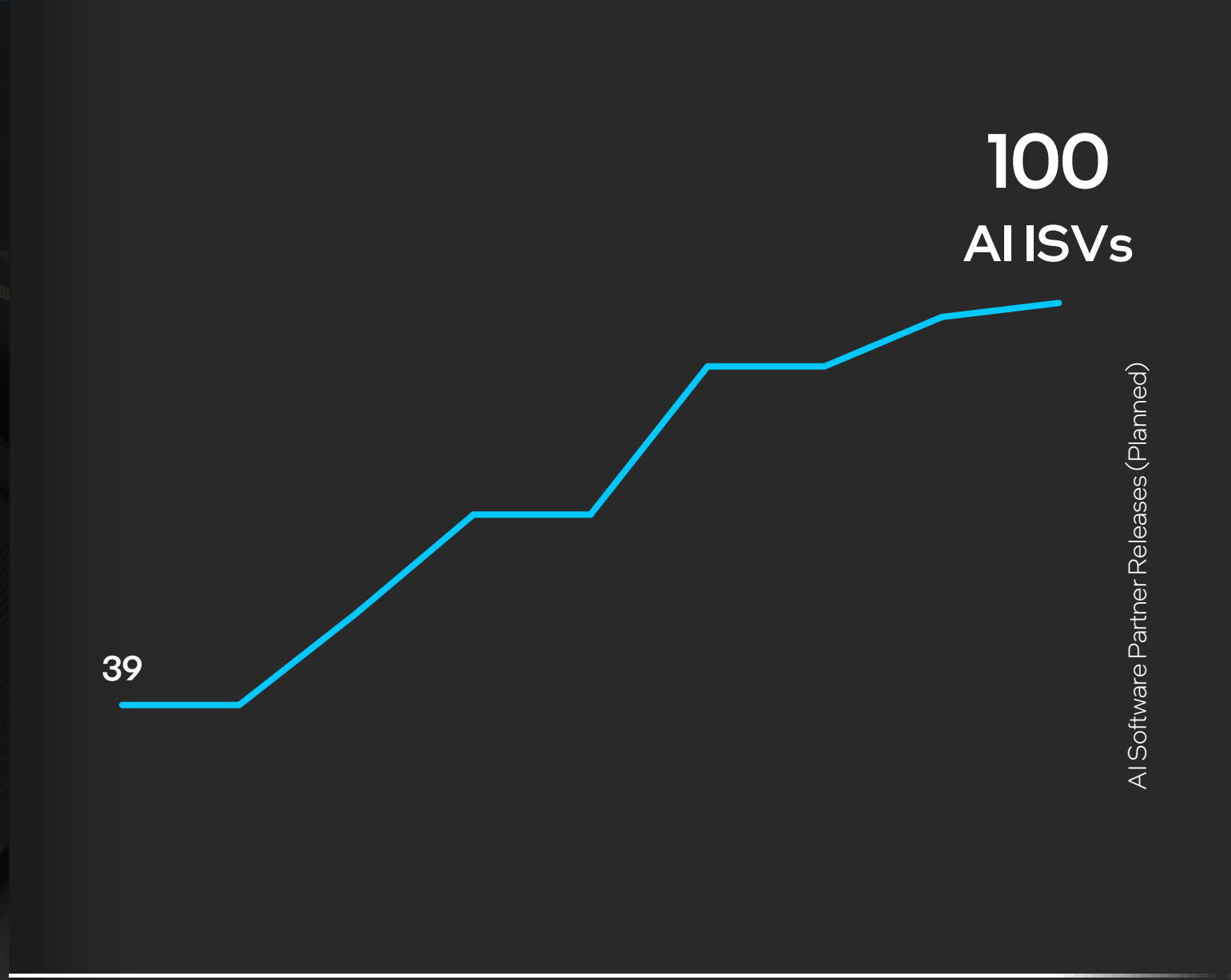
Only Intel’s deep relationships pave the way for widespread AI accessibility.

With a roadmap of over 100 ISVs & features, AI compatibility starts with Intel.



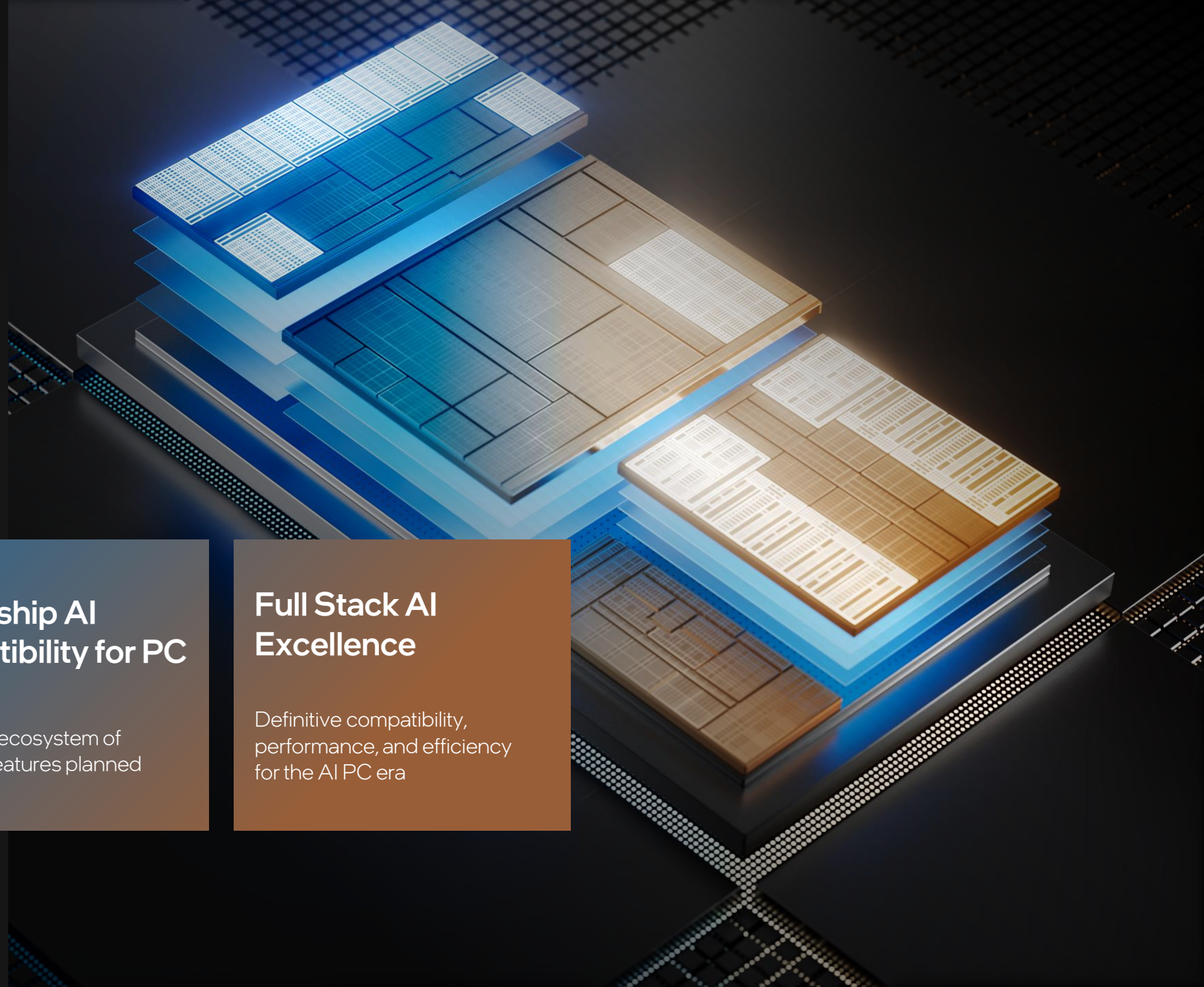
Unmatched
Scale & Speed

Targeting 100 AI software partners throughout 2024



Rollout view as of 4Q23. AI software release dates are determined by Intel software partners. Release dates are subject to change without notice.

Intel Enables AI PCs at Scale



The Scale Provider for AI-Ready PCs

Over 100 million Intel-based PCs with AI accelerators in market through 2025

Leadership AI Compatibility for PC

Massive AI ecosystem of 300+ ISV features planned

Full Stack AI Excellence

Definitive compatibility, performance, and efficiency for the AI PC era

Intel® Core™ Ultra Processor

H-Series Key Platform Features

New Core Architecture

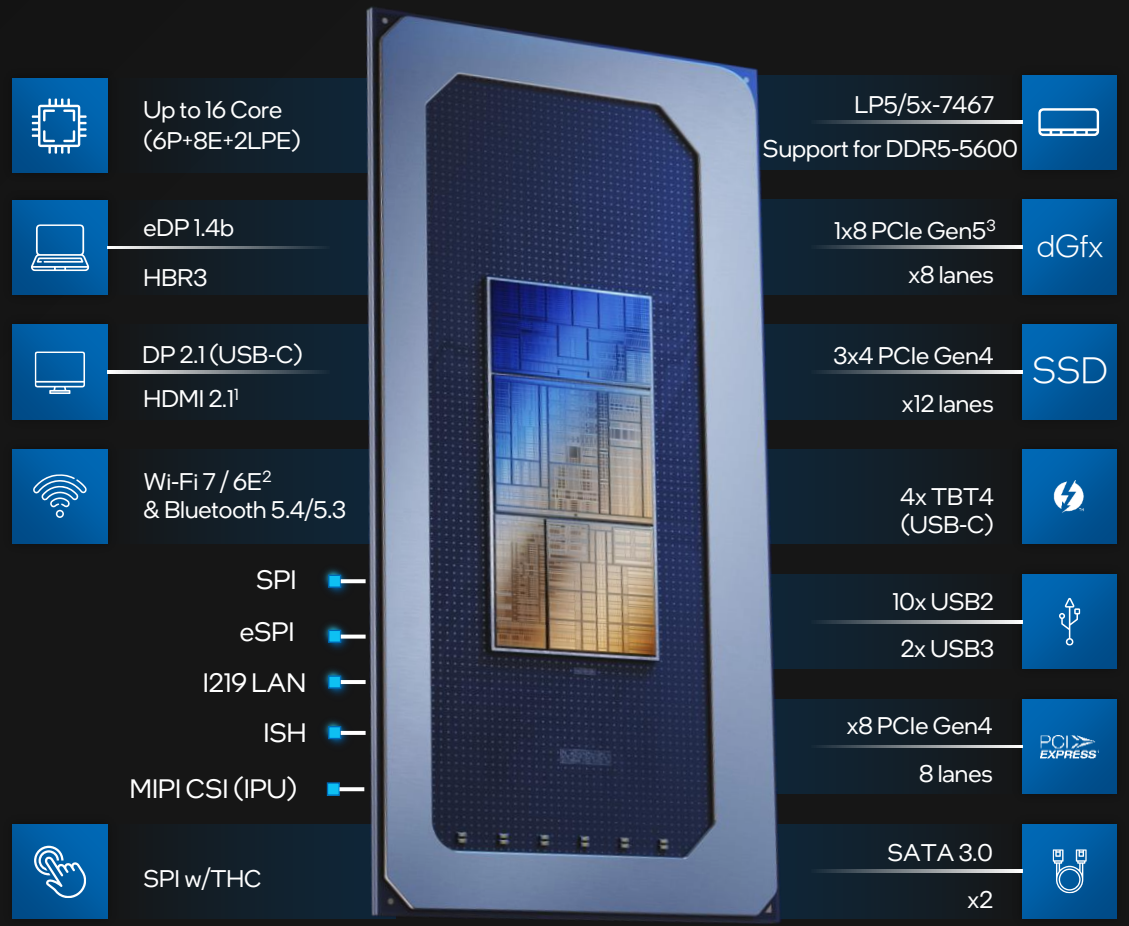
- P-cores + E-cores+ LP E-cores
- Intel® Thread Director optimized scheduling

Intel® Xe LPG GPU

- Intel® Adaptix™ Power share
- Endurance Gaming mode
- Four simultaneous 4K encode streams

Intel NPU

- 2x Gen3 Neural Compute Engines
- Power optimized AI acceleration



50 x 25 x 1.35 BGA Type3

Imaging Processing Unit 6

- High image quality
- Thin bezel

4x Thunderbolt™ 4

- 40Gbps bi-directional, per port
- Certified E2E

Intel® Wi-Fi 7 (5Gig) / 6E (Gig+)[2]

- Unencumbered speed/latency in clean, 6GHz spectrum
- BT 5.4/ 5.3, LE Audio

1. Includes Fixed Rate Link (FRL) mode with support up to 12Gbps
2. Supports Wi-Fi 7 and 6E connectivity; subject to OEM enablement and OS support. For OS schedules, consult associated OSV
3. 1x8 PCIe Gen5 available on MTL-H platform only

Leading Platform Technologies

Intel® Wi-Fi 6E (Gig+) & New Intel® Wi-Fi 7 (5 Gig)

Exclusive **6 GHz** Channels
Legacy Wi-Fi Avoidance

Extreme **Performance & Reliability**

Intel® Killer™ Networking & Intel® Connectivity Performance Suite
AI-Based Connection Optimization Software

Thunderbolt™ 4

THUNDERBOLT™

Universal Cable

40 Gbps

Mandatory Certification

Intel Bluetooth® 5.4

LE Audio: Low Power, High Fidelity Sound

Multi-Stream Audio for True Wireless Stereo

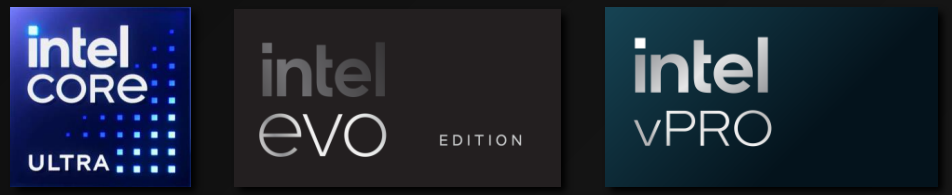
Accessibility Enhancements for Hearing Impaired

Intel® Core™ Ultra Processors

	Processor Number	Cores/ Threads	P-cores	E-cores	LP E-cores	Intel® Smart Cache (LLC)	Max Turbo Frequency (GHz)[4]		Built-In GPU	GPUMax Frequency (GHz)	Xe-cores	Neural Processor	Neural Compute Engines	Max Memory Speed[7]	Maximum Memory Capacity	Processor Base Power (W)	Maximum Turbo Power (W)
							P-core	E-core									
H	Intel® Core™ Ultra 7 165H	16/22	6	8	2	24M	5.0	3.8	Intel® Arc™ GPU[1]	2.3	8	Intel® AI Boost	2x Gen3	DDR5-5600 LPDDR5/x-7467	64GB (LP5) 96GB (DDR5)	28	64, 115
	Intel® Core™ Ultra 7 155H	16/22	6	8	2	24M	4.8	3.8	Intel® Arc™ GPU[1]	2.25	8	Intel® AI Boost	2x Gen3	DDR5-5600 LPDDR5/x-7467	64GB (LP5) 96GB (DDR5)	28	64, 115
	Intel® Core™ Ultra 5 135H	14/18	4	8	2	18M	4.6	3.6	Intel® Arc™ GPU[1]	2.2	7	Intel® AI Boost	2x Gen3	DDR5-5600 LPDDR5/x-7467	64GB (LP5) 96GB (DDR5)	28	64, 115
	Intel® Core™ Ultra 5 125H	14/18	4	8	2	18M	4.5	3.6	Intel® Arc™ GPU[1]	2.2	7	Intel® AI Boost	2x Gen3	DDR5-5600 LPDDR5/x-7467	64GB (LP5) 96GB (DDR5)	28	64, 115
U	Intel® Core™ Ultra 7 165U	12/14	2	8	2	12M	4.9	3.8	Intel® Graphics	2	4	Intel® AI Boost	2x Gen3	DDR5-5600 LPDDR5/x-7467	64GB (LP5) 96GB (DDR5)	15	57
	Intel® Core™ Ultra 7 155U	12/14	2	8	2	12M	4.8	3.8	Intel® Graphics	1.95	4	Intel® AI Boost	2x Gen3	DDR5-5600 LPDDR5/x-7467	64GB (LP5) 96GB (DDR5)	15	57
	Intel® Core™ Ultra 5 135U	12/14	2	8	2	12M	4.4	3.6	Intel® Graphics	1.9	4	Intel® AI Boost	2x Gen3	DDR5-5600 LPDDR5/x-7467	64GB (LP5) 96GB (DDR5)	15	57
	Intel® Core™ Ultra 5 125U	12/14	2	8	2	12M	4.3	3.6	Intel® Graphics	1.85	4	Intel® AI Boost	2x Gen3	DDR5-5600 LPDDR5/x-7467	64GB (LP5) 96GB (DDR5)	15	57
Q1 2024 expected availability																	
H	Intel® Core™ Ultra 9 185H	16/22	6	8	2	24M	5.1	3.8	Intel® Arc™ GPU[1]	2.35	8	Intel® AI Boost	2x Gen3	DDR5-5600 LPDDR5/x-7467	64GB (LP5) 96GB (DDR5)	45	115
U	Intel® Core™ Ultra 7 164U	12/14	2	8	2	12M	4.8	3.8	Intel® Graphics	1.8	4	Intel® AI Boost	2x Gen3	LPDDR5/x-6400	64GB (LP5)	9	30
	Intel® Core™ Ultra 5 134U	12/14	2	8	2	12M	4.4	3.6	Intel® Graphics	1.75	4	Intel® AI Boost	2x Gen3	LPDDR5/x-6400	64GB (LP5)	9	30

1. Only available on systems with at least 16GB of system memory in dual channel configuration.

Learn more at ark.intel.com.



Available beginning Dec. 14

Incredible ecosystem partnerships for broad readiness at launch and beyond

35+ OEM customers

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Enabling Edge AI

Intel Core Ultra processors are built for the PC and the edge.

50+ ISVs, OEMs and ODMs are working with Intel Core Ultra for vertical market offerings at the edge.

ADVANTECH congatec Lenovo Getac kontron VISTRY ISS Lanner NEXCOM TQ SAMSUNG MEDISON

The same processor in your AI PC can:

RETAIL

Enable visually immersive customer experiences with high-resolution displays, and power-efficient AI and computer vision solutions.

HEALTHCARE

Support clinicians with AI-assisted workflows, including AI-based measurements for diagnostics .

INDUSTRIAL

Enhance productivity and safety on shop floors and consolidate workloads on easy-to-manage systems in harder-to-reach places.

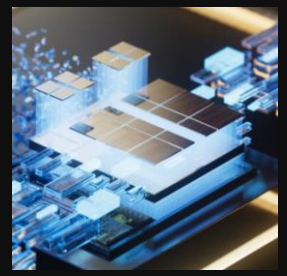
SMART CITIES

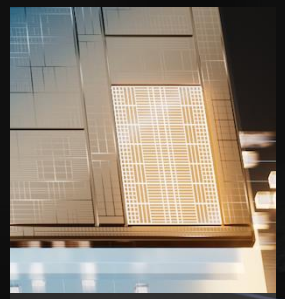
Optimize operational efficiency with scalable device configurations that accommodate more cameras and larger datasets for extended field deployments.

Intel® Core™ Ultra Processor

Up to **11% more CPU compute** than Ryzen in an ultrathin PC

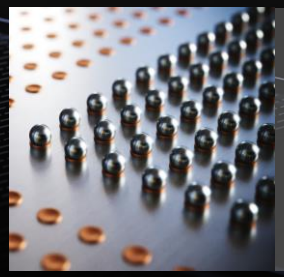
3D Performance Hybrid Architecture





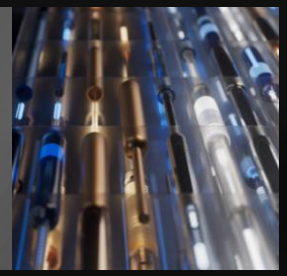
Built-in NPU for efficient AI offload

Up to **70% faster generative AI performance** with GPU and NPU offload

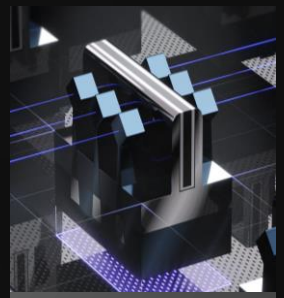


FOVEROS 3D packaging

Up to **16 Cores** and **22 threads** for ultrathin



Thunderbolt™ 4



Intel® Wi-Fi 7 (5Gig)

Streaming video **power reduced by 25%** with LP E-cores

First on **Intel 4**

Built-in intel ARC™ XeSS + AI upscaling

Up to **2X gaming performance** vs. 13th Gen Intel® Core™ i7 processor at 1080p

Learn more at www.intel.com/PerformanceIndex. Results may vary.

Appendix

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Claim # & Statement	Slide # & Title/Details
	3. Leadership Goals Delivered
1. Performance Hybrid Architecture	Performance hybrid architecture combines two core microarchitectures, Performance-cores (P-cores) and Efficient-cores (E-cores), on a single processor die first introduced on 12th Gen Intel® Core™ processors. Select 12th Gen and newer Intel® Core™ processors do not have performance hybrid architecture, only P-cores or E-cores, and may have the same cache size. See ark.intel.com for SKU details, including cache size and core frequency.
2. The most efficient x86 processor for ultrathin systems	Among Windows-based processors powering ultrathin systems (≤28W processor base power, without discrete GPU), based on SPECrate*2017_int_base (n-copy) power and performance estimates for Intel® Core™ Ultra 7 165H on an Intel Internal development system with Intel Compiler 2023.2.3 and in comparison to 13th Gen Intel® Core™ i7-1370P (with compiler ICX 2023.2.3), AMD Ryzen 7 7840U (with compiler ICX 2023.2.3), Qualcomm Snapdragon 8cx Gen 3 (with compiler 1.1.8 clang 14), & Apple M3 (with compiler using Xcode 15, gfortran 12.1.0); as of December 2023. Performance varies by use, configuration and other details. Performance results are based on testing as of 11/27/2023. Full Configurations: Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1=28W, 16 Cores; tested on a Intel Internal development system; Memory: LPDDR5-7467 2x16GB Dual Rank Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 22H2 22621.2215; Graphics driver: Pre-production driver ; BIOS :Preproduction BIOS ,Power Plan set to Balanced, Power Mode set to “Best Performance”. Processor: 13th Gen Core i7 1370P processor, 14 Core (6P + 8E); tested on a Intel Internal development system; Memory; Memory: LPDDR5-6000 2x16GB Dual Rank; Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.608, Graphics driver: 30.0.101.4575; BIOS version:RPLPFWI1.R00.3361.A14.2211151548; Power Plan set to Balanced, Power Mode set to “Best Performance”. Processor: Lenovo T16 AMD Ryzen 7-PRO-7840U processor Memory: LPDDR5-6400 2x16GB Dual Rank; Storage: Samsung 990 PRO NVMe 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2428 (22H2), Graphics driver: 31.0.14005.8004; BIOS version: 1.13; Power Plan set to Balanced, Power Mode set to “Best Power Efficiency”. Processor: Snapdragon 8cx Gen3; 8 Cores; tested on Lenovo X13 Model 21BX0016US , Memory: LPDDR4X 4266 32GB; Storage: Union Memory SSD P/N SSSQL25210 512GB; OS: Windows 11 Pro; 22H2 Version:1000.22000.1165.0; Kernel Version: N3HET86W(1.58 (9-19-2023); Graphics: Adreno integrated GPU; Resolution set to default; Screen Size: 13.3" 1920 x1200; PC BIOS: N/A; GPU Mode: N/A; OS Power Plan: Preferences->Battery->Power Adaptor->energy mode is set to “Default”; VBS:ON; Defender: ON: Tamper Protection: ON.

Claim # & Statement	Slide # & Title/Details
	3. Leadership Goals Delivered
3. CPU core performance leadership for ultrathin systems	As of December 2023, among processors powering ultrathin systems (<28W processor base power, without discrete GPU), based on SPECrate*2017_int_base (n-copy) estimates of Intel® Core™ Ultra 7 165H, including in comparison to 13th Gen Intel® Core™ i7-1370P (with compiler ICX 2023.2.3), AMD Ryzen 7 7840U (with compiler ICX 2023.2.3), Qualcomm Snapdragon 8cx Gen 3 (with compiler 1.1.8 clang 14), & Apple M3 (with compiler using Xcode 15, gfortran 12.1.0); as of December 2023. Performance varies by use, configuration and other details. Performance results are based on testing as of 11/27/2023. Full Configurations: Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1=28W, 16 Cores; tested on a Intel Internal development system; Memory: LPDDR5-7467 2x16GB Dual Rank Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 22H2 22621.2215; Graphics driver: Pre-production driver ; BIOS :Preproduction BIOS ,Power Plan set to Balanced, Power Mode set to “Best Performance”. Processor: 13th Gen Core i7 1370P processor, 14 Core (6P + 8E); tested on a Intel Internal development system; Memory; Memory: LPDDR5-6000 2x16GB Dual Rank; Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.608, Graphics driver: 30.0.101.4575; BIOS version:RPLPFWI1.R00.3361.A14.2211151548; Power Plan set to Balanced, Power Mode set to “Best Performance”. Processor: Lenovo T16 AMD Ryzen 7-PRO-7840U processor Memory: LPDDR5-6400 2x16GB Dual Rank; Storage: Samsung 990 PRO NVMe 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2428 (22H2), Graphics driver: 31.0.14005.8004; BIOS version: 1.13; Power Plan set to Balanced, Power Mode set to “Best Power Efficiency”. Processor: Snapdragon 8cx Gen3; 8 Cores; tested on Lenovo X13 Model 21BX0016US , Memory: LPDDR4X 4266 32GB; Storage: Union Memory SSD P/N SSSQL25210 512GB; OS: Windows 11 Pro; 22H2 Version:1000.22000.1165.0; Kernel Version: N3HET86W(1.58 (9-19-2023); Graphics: Adreno integrated GPU; Resolution set to default; Screen Size: 13.3" 1920 x1200; PC BIOS: N/A; GPU Mode: N/A; OS Power Plan: Preferences->Battery->Power Adaptor->energy mode is set to “Default"; VBS:ON; Defender: ON: Tamper Protection: ON Processor: Apple M3; 8(4performance +4 efficiency); tested on MacBook Pro 14" Model A2918, Memory: LPDDR5 24GB; Storage Brand: Apple, Storage: Apple SSD AP2048Z 2TB; OS: MacOS Version:14.1.1; Kernel Version: Darwin 23.1.0; Graphics: Apple 10 cores integrated GPU; Resolution set to default; Screen Size: 14” 3024x1964 Liquid Retina XDR; PC BIOS: N/A; GPU Mode: N/A; OS Power Plan: Preferences->Battery->Power Adaptor->energy mode is set to “Default"; VBS: N/A; Defender: N/A: Tamper Protection: N/A.
4. Intel® Arc™ GPU	Intel® Arc™ GPU only available on select H-series Intel® Core™ Ultra processor-powered systems with at least 16GB of system memory in dual channel configuration. OEM enablement required; check with OEM or retailer for system configuration details.

Claim # & Statement	Slide # & Title/Details
	4. Intel® Core™ Ultra processors
5. Intel® Core™ Ultra processors	Learn more at ark.intel.com.
	5. The most efficient x86 processor for ultrathin systems
6. The most efficient x86 processor for ultrathin systems	See claim #2.
	7. 3D Performance Hybrid Architecture Vision
7. Performance Hybrid Architecture	See claim #1.
8. Intel® Thread Director	Built into the hardware, Intel® Thread Director is provided only in performance hybrid architecture configurations of 12th Gen or newer Intel® Core™ processors; OS enablement is required. Available features and functionality vary by OS.

Claim # & Statement	Slide # & Title/Details
	8. Leadership CPU compute for ultrathin PCs
9. Leadership CPU compute for Ultrathin PCs	As of December 2023, among processors powering ultrathin systems (<28W processor base power, without discrete GPU), based on SPECrate*2017_int_base (n-copy) estimates of Intel® Core™ Ultra 7 165H, including in comparison to 13th Gen Intel® Core™ i7-1370P (with compiler ICX 2023.2.3), AMD Ryzen 7 7840U (with compiler ICX 2023.2.3), Qualcomm Snapdragon 8cx Gen 3 (with compiler 1.1.8 clang 14), & Apple M3 (with compiler using Xcode 15, gfortran 12.1.0); as of December 2023. Performance varies by use, configuration and other details. Performance results are based on testing as of 11/27/2023. Full Configurations: Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1=28W, 16 Cores; tested on a Intel Internal development system; Memory: LPDDR5-7467 2x16GB Dual Rank Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 22H2 22621.2215; Graphics driver: Pre-production driver ; BIOS :Preproduction BIOS ,Power Plan set to Balanced, Power Mode set to “Best Performance”. Processor: 13th Gen Core i7 1370P processor, 14 Core (6P + 8E); tested on a Intel Internal development system; Memory; Memory: LPDDR5-6000 2x16GB Dual Rank; Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.608, Graphics driver: 30.0.101.4575; BIOS version:RPLPFWI1.R00.3361.A14.2211151548; Power Plan set to Balanced, Power Mode set to “Best Performance”. Processor: Lenovo T16 AMD Ryzen 7-PRO-7840U processor Memory: LPDDR5-6400 2x16GB Dual Rank; Storage: Samsung 990 PRO NVMe 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2428 (22H2), Graphics driver: 31.0.14005.8004; BIOS version: 1.13; Power Plan set to Balanced, Power Mode set to “Best Power Efficiency”. Processor: Snapdragon 8cx Gen3; 8 Cores; tested on Lenovo X13 Model 21BX0016US , Memory: LPDDR4X 4266 32GB; Storage: Union Memory SSD P/N SSSQL25210 512GB; OS: Windows 11 Pro; 22H2 Version:1000.22000.1165.0; Kernel Version: N3HET86W(1.58 (9-19-2023); Graphics: Adreno integrated GPU; Resolution set to default; Screen Size: 13.3" 1920 x1200; PC BIOS: N/A; GPU Mode: N/A; OS Power Plan: Preferences->Battery->Power Adaptor->energy mode is set to “Default"; VBS:ON; Defender: ON: Tamper Protection: ON Processor: Apple M3; 8(4performance +4 efficiency); tested on MacBook Pro 14" Model A2918, Memory: LPDDR5 24GB; Storage Brand: Apple, Storage: Apple SSD AP2048Z 2TB; OS: MacOS Version:14.1.1; Kernel Version: Darwin 23.1.0; Graphics: Apple 10 cores integrated GPU; Resolution set to default; Screen Size: 14” 3024x1964 Liquid Retina XDR; PC BIOS: N/A; GPU Mode: N/A; OS Power Plan: Preferences->Battery->Power Adaptor->energy mode is set to “Default"; VBS: N/A; Defender: N/A: Tamper Protection: N/A.

Claim # & Statement	Slide # & Title/Details
	8. Leadership CPU compute for ultrathin PCs
10. Up to 11% faster than Ryzen at ~28W	Performance results are based on testing as of 11/27/2023. Full Configurations: Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1=28W, 16 Cores; tested on a Intel Internal development system; Memory: LPDDR5-7467 2x16GB Dual Rank Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 22H2 22621.2215; Graphics driver:31.0.101.5005; BIOS Version:MTLPFWI1.R00.3323.D93.2310110906,Power Plan set to Balanced, Power Mode set to “Best Performance”. Processor: AMD Ryzen 7-PRO-7840U processor in a Lenovo Thinkpad T16; Memory: LPDDR5-6400 2x16GB Dual Rank; Storage: Samsung 990 PRO NVMe 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2428 (22H2), Graphics driver: 31.0.14005.8004; BIOS version: 1.13; Power Plan set to Balanced, Power Mode set to “Best Performance”. Among processors powering ultrathin systems (≤28W processor base power, without discrete GPU), based on SPECrate*2017_int_base (n-copy) performance estimates of Intel® Core™ Ultra 7 165H on an Intel Internal development system with Intel Compiler 2023. 2.3; as of December 2023. See intel.com/performanceindex for details. Results may vary. Power: Among processors powering ultrathin systems (≤28W processor base power, without discrete GPU), based on SPECrate*2017_int_base (n-copy) power and performance estimates for Intel® Core™ Ultra 7 165H on an Intel Internal development system with Intel Compiler 2023. 2.3 and in comparison to competitor processors; as of December 2023. See intel.com/performanceindex for details. Results may vary.
	9. Intel® Core™ i7-1370P vs Intel® Core™ Ultra 7 165H
11. 25% reduction in power consumption	Performance results are based on testing as of 11/30/2023. Full Configurations: Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1=28W, 16 Cores; tested on a Intel Internal development system; Memory: LPDDR5-7467 2x16GB Dual Rank Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 22H2 22621.2215; Graphics driver:31.0.101.5005; BIOS Version:MTLPFWI1.R00.3323.D93.2310110906,Power Plan set to Balanced, Power Mode set to “Best Performance”. Processor: 13th Gen Intel® Core™ i7 1370P processor, 14 Core (6P + 8E); tested on a Intel Internal development system; Memory; Memory: LPDDR5-6000 2x16GB Dual Rank; Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.608, Graphics driver: 30.0.101.4575; BIOS version:RPLPFWI1.R00.3361.A14.2211151548; Power Plan set to Balanced, Power Mode set to “Best Power Efficiency”.

Claim # & Statement	Slide # & Title/Details
	10. Broad Spectrum Power Leadership
12. Up to 79% lower power than Ryzen at the same 28W envelope for ultrathin notebooks	Performance results are based on testing as of 11/30/2023. Full Configurations: Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1=28W, 16 Cores; tested on a Intel Internal development system; Memory: LPDDR5-7467 2x16GB Dual Rank Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 22H2 22621.2215; Graphics driver: Pre-production driver ; BIOS :Preproduction BIOS ,Power Plan set to Balanced, Power Mode set to “Best Power Efficiency”. Processor: AMD Ryzen 7-PRO-7840U processor in a Lenovo Thinkpad T16; 8C 16T; Memory: LPDDR5-6400 2x16GB Dual Rank; Storage: Samsung 990 PRO NVMe 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2428 (22H2), Graphics driver: 31.0.14005.8004; BIOS version: 1.13; Power Plan set to Balanced, Power Mode set to “Best Power Efficiency”.
	11. CPU Core Performance Leadership
13. CPU Core Performance Leadership for Ultrathin Systems	See claim #3.
	13. Crestmont E-core
14. IPC gains over prior E-cores	Architectural simulation vs. Gracemont architecture across a broad set of workloads. Results may vary.
15. Intel® Thread Director	See claim #8.
16. AI acceleration VNNI, ISA improvements	Architectural simulation vs. Gracemont architecture across a broad set of workloads. VNNI improvements based on doubling the number of VNNI ports. Results may vary.
	14. Redwood Cove P-core
17. Improved performance efficiency	Architectural simulation vs. Golden Cove architecture. Results may vary across workloads.
18. Increased bandwidth per core package	Architectural simulation vs. Golden Cove architecture. Results may vary across workloads.
19. Intel® Thread Director	See claim #8.

Claim # & Statement	Slide # & Title/Details
	15. Leadership Compute Performance
20. Leadership compute performance	As of December 2023, among processors powering ultrathin systems (<28W processor base power, without discrete GPU), based on SPECrate*2017_int_base (n-copy) estimates of Intel® Core™ Ultra 7 165H, including in comparison to 13th Gen Intel® Core™ i7-1370P (with compiler ICX 2023.2.3), AMD Ryzen 7 7840U (with compiler ICX 2023.2.3), Qualcomm Snapdragon 8cx Gen 3 (with compiler 1.1.8 clang 14), & Apple M3 (with compiler using Xcode 15, gfortran 12.1.0); as of December 2023. Performance varies by use, configuration and other details. Performance results are based on testing as of 11/27/2023. Full Configurations: Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1=28W, 16 Cores; tested on a Intel Internal development system; Memory: LPDDR5-7467 2x16GB Dual Rank Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 22H2 22621.2215; Graphics driver: Pre-production driver ; BIOS :Preproduction BIOS ,Power Plan set to Balanced, Power Mode set to “Best Performance”. Processor: 13th Gen Core i7 1370P processor, 14 Core (6P + 8E); tested on a Intel Internal development system; Memory; Memory: LPDDR5-6000 2x16GB Dual Rank; Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.608, Graphics driver: 30.0.101.4575; BIOS version:RPLPFWI1.R00.3361.A14.2211151548; Power Plan set to Balanced, Power Mode set to “Best Performance”. Processor: Lenovo T16 AMD Ryzen 7-PRO-7840U processor Memory: LPDDR5-6400 2x16GB Dual Rank; Storage: Samsung 990 PRO NVMe 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2428 (22H2), Graphics driver: 31.0.14005.8004; BIOS version: 1.13; Power Plan set to Balanced, Power Mode set to “Best Performance”. Processor: Snapdragon 8cx Gen3; 8 Cores; tested on Lenovo X13 Model 21BX0016US , Memory: LPDDR4X 4266 32GB; Storage: Union Memory SSD P/N SSSQL25210 512GB; OS: Windows 11 Pro; 22H2 Version:1000.22000.1165.0; Kernel Version: N3HET86W(1.58 (9-19-2023); Graphics: Adreno integrated GPU; Resolution set to default; Screen Size: 13.3" 1920 x1200; PC BIOS: N/A; GPU Mode: N/A; OS Power Plan: Preferences->Battery->Power Adaptor->energy mode is set to “Default"; VBS:ON; Defender: ON: Tamper Protection: ON Processor: Apple M3; 8(4performance +4 efficiency); tested on MacBook Pro 14" Model A2918, Memory: LPDDR5 24GB; Storage Brand: Apple, Storage: Apple SSD AP2048Z 2TB; OS: MacOS Version:14.1.1; Kernel Version: Darwin 23.1.0; Graphics: Apple 10 cores integrated GPU; Resolution set to default; Screen Size: 14” 3024x1964 Liquid Retina XDR; PC BIOS: N/A; GPU Mode: N/A; OS Power Plan: Preferences->Battery->Power Adaptor->energy mode is set to “Default"; VBS: N/A; Defender: N/A: Tamper Protection: N/A.

Claim # & Statement	Slide # & Title/Details
	15. Leadership Compute Performance
21. +8% MT performance vs Intel® Core™ i7 1370P	Performance results are based on testing as of 11/27/2023. Full Configurations: Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1= 28W 16 Cores; tested on a Intel Internal development system; Memory: LPDDR5-7467 2x16GB Dual Rank Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 22H2 22621.2215; Graphics driver: Pre-production driver ; BIOS :Preproduction BIOS ,Power Plan set to Balanced, Power Mode set to “Best Performance”. Among processors powering ultrathin systems (≤28W processor base power, without discrete GPU), based on SPECrate*2017_int_base (n-copy) performance estimates of Intel® Core™ Ultra 7 165H on an Intel Internal development system with Intel Compiler 2023. 2.3; as of December 2023. See intel.com/performanceindex for details. Results may vary. Power: Among processors powering ultrathin systems (≤28W processor base power, without discrete GPU), based on SPECrate*2017_int_base (n-copy) power and performance estimates for Intel® Core™ Ultra 7 165H on an Intel Internal development system with Intel Compiler 2023. 2.3 and in comparison to competitor processors; as of December 2023. See intel.com/performanceindex for details. Results may vary.

Claim # & Statement	Slide # & Title/Details
	15. Leadership Compute Performance
22. +11% MT performance vs Ryzen 7840U	Performance results are based on testing as of 11/27/2023. Full Configurations: Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1=28W, 16 Cores; tested on a Intel Internal development system; Memory: LPDDR5-7467 2x16GB Dual Rank Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 22H2 22621.2215; Graphics driver:31.0.101.5005; BIOS Version:MTLPFWI1.R00.3323.D93.2310110906,Power Plan set to Balanced, Power Mode set to “Best Performance”. Processor: AMD Ryzen 7-PRO-7840U processor in a Lenovo Thinkpad T16; Memory: LPDDR5-6400 2x16GB Dual Rank; Storage: Samsung 990 PRO NVMe 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2428 (22H2), Graphics driver: 31.0.14005.8004; BIOS version: 1.13; Power Plan set to Balanced, Power Mode set to “Best Performance”. Among processors powering ultrathin systems (≤28W processor base power, without discrete GPU), based on SPECrate*2017_int_base (n-copy) performance estimates of Intel® Core™ Ultra 7 165H on an Intel Internal development system with Intel Compiler 2023. 2.3; as of December 2023. See intel.com/performanceindex for details. Results may vary. Power: Among processors powering ultrathin systems (≤28W processor base power, without discrete GPU), based on SPECrate*2017_int_base (n-copy) power and performance estimates for Intel® Core™ Ultra 7 165H on an Intel Internal development system with Intel Compiler 2023. 2.3 and in comparison competitor processors; as of December 2023. See intel.com/performanceindex for details. Results may vary.

Claim # & Statement	Slide # & Title/Details
	16. Leadership CPU Core Performance
23. Leadership CPU core performance	As of December 2023, among processors powering ultrathin systems (<28W processor base power, without discrete GPU), based on SPECrate*2017_int_base (1-copy) estimates of Intel® Core™ Ultra 7 165H, including in comparison to 13th Gen Intel® Core™ i7-1370P (with compiler ICX 2023.2.3), AMD Ryzen 7 7840U (with compiler ICX 2023.2.3), Qualcomm Snapdragon 8cx Gen 3 (with compiler 1.1.8 clang 14), & Apple M3 (with compiler using Xcode 15, gfortran 12.1.0); as of December 2023. Performance varies by use, configuration and other details. Performance results are based on testing as of 11/27/2023. Full Configurations: Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1=28W, 16 Cores; tested on a Intel Internal development system; Memory: LPDDR5-7467 2x16GB Dual Rank Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 22H2 22621.2215; Graphics driver: Pre-production driver ; BIOS :Preproduction BIOS ,Power Plan set to Balanced, Power Mode set to “Best Performance”. Processor: 13th Gen Core i7 1370P processor, 14 Core (6P + 8E); tested on a Intel Internal development system; Memory; Memory: LPDDR5-6000 2x16GB Dual Rank; Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.608, Graphics driver: 30.0.101.4575; BIOS version:RPLPFWI1.R00.3361.A14.2211151548; Power Plan set to Balanced, Power Mode set to “Best Performance”. Processor: Lenovo T16 AMD Ryzen 7-PRO-7840U processor Memory: LPDDR5-6400 2x16GB Dual Rank; Storage: Samsung 990 PRO NVMe 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2428 (22H2), Graphics driver: 31.0.14005.8004; BIOS version: 1.13; Power Plan set to Balanced, Power Mode set to “Best Performance”. Processor: Snapdragon 8cx Gen3; 8 Cores; tested on Lenovo X13 Model 21BX0016US , Memory: LPDDR4X 4266 32GB; Storage: Union Memory SSD P/N SSSQL25210 512GB; OS: Windows 11 Pro; 22H2 Version:1000.22000.1165.0; Kernel Version: N3HET86W(1.58 (9-19-2023); Graphics: Adreno integrated GPU; Resolution set to default; Screen Size: 13.3" 1920 x1200; PC BIOS: N/A; GPU Mode: N/A; OS Power Plan: Preferences->Battery->Power Adaptor->energy mode is set to “Default"; VBS:ON; Defender: ON: Tamper Protection: ON Processor: Apple M3; 8(4performance +4 efficiency); tested on MacBook Pro 14" Model A2918, Memory: LPDDR5 24GB; Storage Brand: Apple, Storage: Apple SSD AP2048Z 2TB; OS: MacOS Version:14.1.1; Kernel Version: Darwin 23.1.0; Graphics: Apple 10 cores integrated GPU; Resolution set to default; Screen Size: 14” 3024x1964 Liquid Retina XDR; PC BIOS: N/A; GPU Mode: N/A; OS Power Plan: Preferences->Battery->Power Adaptor->energy mode is set to “Default"; VBS: N/A; Defender: N/A: Tamper Protection: N/A.

Claim # & Statement	Slide # & Title/Details
	16. Leadership CPU Core Performance
24. +12% 1T performance vs Ryzen 7840U	Performance results are based on testing as of 11/27/2023. Full Configurations: Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1=28W, 16 Cores; tested on a Intel Internal development system; Memory: LPDDR5-7467 2x16GB Dual Rank Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 22H2 22621.2215; Graphics driver:31.0.101.5005; BIOS Version:MTLPFWI1.R00.3323.D93.2310110906,Power Plan set to Balanced, Power Mode set to “Best Performance”. Processor: AMD Ryzen 7-PRO-7840U processor in a Lenovo Thinkpad T16; Memory: LPDDR5-6400 2x16GB Dual Rank; Storage: Samsung 990 PRO NVMe 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2428 (22H2), Graphics driver: 31.0.14005.8004; BIOS version: 1.13; Power Plan set to Balanced, Power Mode set to “Best Performance”. Among processors powering ultrathin systems (≤28W processor base power, without discrete GPU), based on SPECrate*2017_int_base (1-copy) performance estimates of Intel® Core™ Ultra 7 165H on an Intel Internal development system with Intel Compiler 2023. 2.3; as of December 2023. See intel.com/performanceindex for details. Results may vary. Power: Among processors powering ultrathin systems (≤28W processor base power, without discrete GPU), based on SPECrate*2017_int_base (1-copy) power and performance estimates for Intel® Core™ Ultra 7 165H on an Intel Internal development system with Intel Compiler 2023. 2.3 and in comparison competitor processors; as of December 2023. See intel.com/performanceindex for details. Results may vary.

Claim # & Statement	Slide # & Title/Details
	17. A Productivity Powerhouse
25. +31% faster video editing performance as measured by UL Procyon Video Editing	Performance results are based on testing as of 11/27/2023. Full Configurations: Processor: Intel Core Ultra 7 155H processor (MTL-H) PL1=28W, 16 Cores; tested in Asus Zenbook 14; Memory: 32GB LPDDR5-7467MHz; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.2715 ; Graphics card: Integrated Intel ARC graphics, Graphics Driver: 31.0.101.5006; NPU Driver:31.0.100.1688; BIOS: UX3405MA.202 Power Plan set to Balanced, Power Mode set to “Best performance”; OEM power application : My Asus =Performance Mode ; VBS enabled, Defender enabled, and Tamper Protection enabled. Processor: 13th Gen Intel® Core™ i7 1360P processor, PL1 set to 28W 14Core; tested in Asus Zenbook 14; Memory: 32GB LPDDR5-4800MHz; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.2715 ; Graphics card: Integrated Intel graphics, Graphics Driver: 31.0.101.4953; NPU Driver:NA; BIOS: UP3404VA.301 Power Plan set to Balanced, Power Mode set to “Best performance”; OEM power application : My Asus =Performance Mode ; VBS enabled, Defender enabled, and Tamper Protection enabled. Processor: AMD Ryzen 7 7840U, PL1 set to 28W, 8Core; tested in Asus Zenbook 13; Memory: 16GB LPDDR5-6400MHz; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.2715 ; Graphics card: Integrated AMD Radeon™ 780M, Graphics Driver: 31.0.14003.62005; NPU Driver:NA; BIOS: UM5302LA.301 Power Plan set to Balanced, Power Mode set to “Best performance”; OEM power application : My Asus =Performance Mode ; VBS enabled, Defender enabled, and Tamper Protection enabled. Plan set to Balanced, Power Mode set to “Best performance”; OEM power application: My Asus =Performance Mode; VBS enabled, Defender enabled, and Tamper Protection enabled. Battery size: 66543 W-hr.

Claim # & Statement	Slide # & Title/Details
	17. A Productivity Powerhouse
26. +41% faster video editing performance as measured by PugetBench Premiere Pro Extended	Performance results are based on testing as of 11/27/2023. Full Configurations: Processor: Intel Core Ultra 7 155H processor (MTL-H) PL1=28W, 16 Cores; tested in Asus Zenbook 14; Memory: 32GB LPDDR5-7467MHz; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.2715 ; Graphics card: Integrated Intel ARC graphics, Graphics Driver: 31.0.101.5006; NPU Driver:31.0.100.1688; BIOS: UX3405MA.202 Power Plan set to Balanced, Power Mode set to “Best performance”; OEM power application : My Asus =Performance Mode ; VBS enabled, Defender enabled, and Tamper Protection enabled. Processor: 13th Gen Intel® Core™ i7 1360P processor, PL1 set to 28W 14Core; tested in Asus Zenbook 14; Memory: 32GB LPDDR5-4800MHz; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.2715 ; Graphics card: Integrated Intel graphics, Graphics Driver: 31.0.101.4953; NPU Driver: NA; BIOS: UP3404VA.301 Power Plan set to Balanced, Power Mode set to “Best performance”; OEM power application : My Asus =Performance Mode ; VBS enabled, Defender enabled, and Tamper Protection enabled. Processor: AMD Ryzen 7 7840U, PL1 set to 28W, 8Core; tested in Asus Zenbook 13; Memory: 16GB LPDDR5-6400MHz; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.2715 ; Graphics card: Integrated AMD Radeon™ 780M, Graphics Driver: 31.0.14003.62005; NPU Driver:NA; BIOS: UM5302LA.301 Power Plan set to Balanced, Power Mode set to “Best performance”; OEM power application : My Asus =Performance Mode ; VBS enabled, Defender enabled, and Tamper Protection enabled. Plan set to Balanced, Power Mode set to “Best performance”; OEM power application: My Asus =Performance Mode ; VBS enabled, Defender enabled, and Tamper Protection enabled. Battery size: 66543 W-hr.

Claim # & Statement	Slide # & Title/Details
	17. A Productivity Powerhouse
27. +19% faster photo editing performance as measured by PugetBench Lightroom	Performance results are based on testing as of 11/27/2023. Full Configurations: Processor: Intel Core Ultra 7 155H processor (MTL-H) PL1=28W, 16 Cores; tested in Asus Zenbook 14; Memory: 32GB LPDDR5-7467MHz; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.2715 ; Graphics card: Integrated Intel ARC graphics, Graphics Driver: 31.0.101.5006; NPU Driver:31.0.100.1688; BIOS: UX3405MA.202 Power Plan set to Balanced, Power Mode set to “Best performance”; OEM power application : My Asus =Performance Mode ; VBS enabled, Defender enabled, and Tamper Protection enabled. Processor: 13th Gen Intel® Core™ i7 1360P processor, PL1 set to 28W 14Core; tested in Asus Zenbook 14; Memory: 32GB LPDDR5-4800MHz; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.2715 ; Graphics card: Integrated Intel graphics, Graphics Driver: 31.0.101.4953; NPU Driver: NA; BIOS: UP3404VA.301 Power Plan set to Balanced, Power Mode set to “Best performance”; OEM power application : My Asus =Performance Mode ; VBS enabled, Defender enabled, and Tamper Protection enabled. Processor: AMD Ryzen 7 7840U, PL1 set to 28W, 8Core; tested in Asus Zenbook 13; Memory: 16GB LPDDR5-6400MHz; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.2715 ; Graphics card: Integrated AMD Radeon™ 780M, Graphics Driver: 31.0.14003.62005; NPU Driver: NA; BIOS: UM5302LA.301 Power Plan set to Balanced, Power Mode set to “Best performance”; OEM power application : My Asus =Performance Mode ; VBS enabled, Defender enabled, and Tamper Protection enabled. Plan set to Balanced, Power Mode set to “Best performance”; OEM power application: My Asus =Performance Mode ; VBS enabled, Defender enabled, and Tamper Protection enabled. Battery size: 66543 W-hr.
	19. Intel ® Arc™ GPU
28. Intel® Arc™ GPU	See claim #4.

Claim # & Statement	Slide # & Title/Details
	19. Intel ® Arc™ GPU
29. ~2x performance vs previous gen	As measured by average FPS on Baldur's Gate 3. Performance results are based on testing as of 11/27/2023. Full Configurations: Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1=OOB (32W),16 Cores tested on a Non production OEM design; Memory: 32GB LPDDR5-6400MHz; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.2428 ; Graphics card: Integrated Intel ARC graphics, Power Plan set to Balanced, Power Mode set to "Best performance"; OEM power application (MSI Center)set to MSI Center: "Extreme performance" ; VBS enabled, Defender enabled, and Tamper Protection enabled. Pre-production BIOS and drivers. Processor: 13th Gen Intel® Core™ i7 1370P processor, PL1 set to 32W 14Core; tested on a Non production OEM design; Memory: 32GB LPDDR5-4800MHz; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.2428 ; Graphics card: Integrated Intel GPU, Graphics driver 31.0.101.4952 Power Plan set to Balanced, Power Mode set to "Best performance"; OEM power application (MSI Center)set to MSI Center: "Extreme performance" ; VBS enabled, Defender enabled, and Tamper Protection enabled. BIOS E1592IMS.70A.
30. ~2x perf/watt vs previous gen	See claim #29.
	20. Up to 2X Faster Graphics Performance than 13th Gen Intel® Core™ i7 processor at 28W
31. Up to 2x faster graphics performance than 13th Gen Intel ® Core™ i7 processor at 28W	See claim #29.
32. Relative Gaming Performance 1080p Medium, No AI Upscaling +100% more FPS on Baldur's Gate 3 +95% more FPS on Resident Evil Village +90% more FPS on Mount & Blade II: Bannerlord +88% more FPS on Borderlands 3	Performance results are based on testing as of 11/27/2023. Full Configurations: Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1=OOB (32W),16 Cores tested on a Non production OEM design; Memory: 32GB LPDDR5-6400MHz; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.2428 ; Graphics card: Integrated Intel ARC graphics, Power Plan set to Balanced, Power Mode set to "Best performance"; OEM power application (MSI Center)set to MSI Center: "Extreme performance" ; VBS enabled, Defender enabled, and Tamper Protection enabled. Pre-production BIOS and drivers. Processor: 13th Gen Intel® Core™ i7 1370P processor, PL1 set to 32W 14Core; tested on a Non production OEM design; Memory: 32GB LPDDR5-4800MHz; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.2428 ; Graphics card: Integrated Intel GPU, Graphics driver 31.0.101.4952 Power Plan set to Balanced, Power Mode set to "Best performance"; OEM power application (MSI Center)set to MSI Center: "Extreme performance" ; VBS enabled, Defender enabled, and Tamper Protection enabled. BIOS E1592IMS.70A

Claim # & Statement	Slide # & Title/Details
	20. Up to 2X Faster Graphics Performance than 13th Gen Intel® Core™ i7 processor at 28W
32. cont'd Relative Gaming Performance 1080p Medium, No AI Upscaling +86% more FPS on World of Warcraft +58% more FPS on Counter-Strike 2 +54% more FPS on League of Legends +52% more FPS on Far Cry 6 +46% more FPS on PUBG: Battlegrounds +40% more FPS on Overwatch 2 +39% more FPS on War Thunder +39% more FPS on Team Fortress 2 +26% more FPS on DOTA 2 +23% more FPS on Final Fantasy XIV: Endwalker +16% more FPS on Apex Legends +9% more FPS on Grand Theft Auto V	Performance results are based on testing as of 11/27/2023. Full Configurations: Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1=OOB (32W),16 Cores tested on a Non production OEM design; Memory: 32GB LPDDR5-6400MHz; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.2428 ; Graphics card: Integrated Intel ARC graphics, Power Plan set to Balanced, Power Mode set to "Best performance"; OEM power application (MSI Center)set to MSI Center: "Extreme performance" ; VBS enabled, Defender enabled, and Tamper Protection enabled. Pre-production BIOS and drivers. Processor: 13th Gen Intel® Core™ i7 1370P processor, PL1 set to 32W 14Core; tested on a Non production OEM design; Memory: 32GB LPDDR5-4800MHz; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.2428 ; Graphics card: Integrated Intel GPU, Graphics driver 31.0.101.4952 Power Plan set to Balanced, Power Mode set to "Best performance"; OEM power application (MSI Center)set to MSI Center: "Extreme performance" ; VBS enabled, Defender enabled, and Tamper Protection enabled. BIOS E1592IMS.70A

Claim # & Statement	Slide # & Title/Details
	21. World-Class Graphics Performance for Ultrathin Systems
33. Up to 16% more FPS on an average when calculated across a list of 18 games	Performance results are based on testing as of 11/27/2023. Full Configurations: Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1=OOB (32W),16 Cores tested on a Non production OEM design; Memory: 32GB LPDDR5-6400MHz; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.2428 ; Graphics card: Integrated Intel ARC graphics, Power Plan set to Balanced, Power Mode set to “Best performance”; OEM power application (MSI Center)set to MSI Center: "Extreme performance” ; VBS enabled, Defender enabled, and Tamper Protection enabled. Pre-production BIOS and drivers. Processor: AMD Ryzen 7 7840U processor, 8Core; tested in HP Pavilion Plus 14; Memory: 16GB LPDDR5-6400MHz; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.2428 ; Graphics card: Integrated AMD Radeon 780M, Graphics driver 31.0.14068.4002 Power Plan set to Balanced, Power Mode set to “Best performance”; OEM power application MyHP= Balanced; VBS enabled, Defender enabled, and Tamper Protection enabled. BIOS F.02 Screen size 14” List of Games –Apex Legends, Baldurs Gate 3, Borderlands 3, Counter Strike 2, DOTA 2, Far Cry 6, Fortnite,Final Fantasy XIV, Grand Theft Auto V, League of Legends, Mount & Blade II- Bannerlord, Overwatch 2, PUBG: Battlegrounds, Resident Evil Village, Team Fortress 2, Valorant, War Thunder, World of Warcraft
34. Up to 16% more FPS on an average when calculated across a list of 18 games	Performance results are based on testing as of 11/27/2023. Full Configurations: Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1=OOB (32W),16 Cores tested on a Non production OEM design; Memory: 32GB LPDDR5-6400MHz; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.2428 ; Graphics card: Integrated Intel ARC graphics, Power Plan set to Balanced, Power Mode set to “Best performance”; OEM power application (MSI Center)set to MSI Center: "Extreme performance” ; VBS enabled, Defender enabled, and Tamper Protection enabled. Pre-production BIOS and drivers. Processor: AMD Ryzen 7-PRO-7840U processor in a Lenovo Thinkpad T16; Memory: LPDDR5-6400 2x16GB Dual Rank; Storage: Samsung 990 PRO NVMe 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2428 (22H2), Graphics driver: 31.0.14005.8004; BIOS version: 1.13; Power Plan set to Balanced, Power Mode set to “Best Performance”. List of Games –Apex Legends, Baldurs Gate 3, Borderlands 3, Counter Strike 2, DOTA 2, Far Cry 6, Fortnite,Final Fantasy XIV, Grand Theft Auto V, League of Legends, Mount & Blade II- Bannerlord, Overwatch 2, PUBG: Battlegrounds, Resident Evil Village, Team Fortress 2, Valorant, War Thunder, World of Warcraft

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	23. Average 39% Performance Uplift at 1080p with XeSS
35. Average 39% performance uplift at 1080p with XeSS Up to 14% more FPS on Deceive Inc Up to 26% more FPS on Chorus Up to 36% more FPS on Anvil Up to 24% more FPS on F1 2023 Up to 11% more FPS on Chivalry 2 Up to 31% more FPS on Ghostrunner 2 Up to 37% more FPS on Hitman 3 - Dubai Up to 129% more FPS on Like a Dragon: Gaiden Up to 34% more FPS on Call of Duty: Modern Warfare 2 Up to 23% more FPS on Death Stranding Directors Cut	Performance results are based on testing as of 11/27/2023. Full Configurations: Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1=OOB (32W),16 Cores tested on a Non production OEM design; Memory: 32GB LPDDR5-6400MHz; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.2428 ; Graphics card: Integrated Intel ARC graphics, Power Plan set to Balanced, Power Mode set to “Best performance”; OEM power application (MSI Center)set to MSI Center: "Extreme performance” ; VBS enabled, Defender enabled, and Tamper Protection enabled. Pre-production BIOS and drivers. For more information on AI-based XeSS upscaling go to intel.com/graphics.

Claim # & Statement	Slide # & Title/Details
	23. Average 39% Performance Uplift at 1080p with XeSS
35. cont'd Average 39% performance uplift at 1080p with XeSS Up to 18% more FPS on Marvel's Spider-Man Remastered Up to 47% more FPS on Dying Light 2 Stay Human Up to 35% more FPS on Shadow of the Tomb Raider Up to 93% more FPS on Witcher 3: Wildhunt Up to 42% more FPS on Cyberpunk 2077	Performance results are based on testing as of 11/27/2023. Full Configurations: Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1=OOB (32W),16 Cores tested on a Non production OEM design; Memory: 32GB LPDDR5-6400MHz; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.2428 ; Graphics card: Integrated Intel ARC graphics, Power Plan set to Balanced, Power Mode set to "Best performance"; OEM power application (MSI Center)set to MSI Center: "Extreme performance" ; VBS enabled, Defender enabled, and Tamper Protection enabled. Pre-production BIOS and drivers. For more information on AI-based XeSS upscaling go to intel.com/graphics.
	24. Ghostrunner 2 Gaming Performance
36. Up to 3x faster 1080p gaming	Performance results are based on testing as of 1/27/2023. Full Configurations: Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1=OOB (32W),16 Cores tested on a Non production OEM design; Memory: 32GB LPDDR5-6400MHz; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.2428 ; Graphics card: Integrated Intel ARC graphics, Power Plan set to Balanced, Power Mode set to "Best performance"; OEM power application (MSI Center)set to MSI Center: "Extreme performance" ; VBS enabled, Defender enabled, and Tamper Protection enabled. Pre-production BIOS and drivers. Processor: 13th Gen Intel® Core™ i7 1370P processor, PL1 set to 32W 14Core; tested on a Non production OEM design; Memory: 32GB LPDDR5-4800MHz; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.2428 ; Graphics card: Integrated Intel GPU, Graphics driver 31.0.101.4952 Power Plan set to Balanced, Power Mode set to "Best performance"; OEM power application (MSI Center)set to MSI Center: "Extreme performance" ; VBS enabled, Defender enabled, and Tamper Protection enabled. BIOS E1592IMS.70A.

Claim # & Statement	Slide # & Title/Details
	24. Ghostrunner 2 Gaming Performance
37. Up to 3x more power efficient	Performance results are based on testing as of 11/27/2023. Full Configurations: Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1=OOB (32W),16 Cores tested on a Non production OEM design; Memory: 32GB LPDDR5-6400MHz; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.2428 ; Graphics card: Integrated Intel ARC graphics, Power Plan set to Balanced, Power Mode set to “Best performance”; OEM power application (MSI Center)set to MSI Center: "Extreme performance” ; VBS enabled, Defender enabled, and Tamper Protection enabled. Pre-production BIOS and drivers. Processor: 13th Gen Intel® Core™ i7 1370P processor, PL1 set to 32W 14Core; tested on a Non production OEM design; Memory: 32GB LPDDR5-4800MHz; Storage: Samsung SSD 980 PRO 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.2428 ; Graphics card: Integrated Intel GPU, Graphics driver 31.0.101.4952 Power Plan set to Balanced, Power Mode set to “Best performance”; OEM power application (MSI Center)set to MSI Center: "Extreme performance” ; VBS enabled, Defender enabled, and Tamper Protection enabled. BIOS E1592IMS.70A.

Claim # & Statement	Slide # & Title/Details
	25. The Best AI PC Experience
38. The best AI PC experience	As of December 2023, based on the broad compatibility, extensive software options, unique architecture, and impressive performance and other attributes that combine to deliver the best overall AI experience, including in comparison to AMD Ryzen 7 7840U, Qualcomm Snapdragon 8cx Gen 3, and Apple M3, as measured by: • Strong AI performance on CPU, GPU, and NPU features, including on UL Procyon AI Inference benchmark • Broad selection of publicly available applications and proof of concepts • Ongoing expansion of AI features and ISV-developed applications • Dedicated AI engine to enable increased security and privacy with local AI processing • Improved built-in GPU AI features may require software purchase, subscription or enablement by a software or platform provider, or may have specific configuration or compatibility requirements. Learn more at intel.com/aipc. Performance varies by use, configuration and other details. Performance results are based on testing as of 11/27/2023.Full Configurations: Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1=28W, 16 Cores; tested on a Intel Internal development system; Memory: LPDDR5-7467 2x16GB Dual Rank Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 22H2 22621.2215; Graphics driver: Pre-production driver ; BIOS :Preproduction BIOS ,Power Plan set to Balanced, Power Mode set to “Best Performance”. Processor: 13th Gen Intel® Core™ i7 1370P processor, 14 Core (6P + 8E); tested on a Intel Internal development system; Memory; Memory: LPDDR5-6000 2x16GB Dual Rank; Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.608, Graphics driver: 30.0.101.4575; BIOS version:RPLPFWI1.R00.3361.A14.2211151548; Power Plan set to Balanced, Power Mode set to “Best Performance”. Processor: Lenovo T16 AMD Ryzen 7-PRO-7840U processor Memory: LPDDR5-6400 2x16GB Dual Rank; Storage: Samsung 990 PRO NVMe 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2428 (22H2), Graphics driver: 31.0.14005.8004; BIOS version: 1.13; Power Plan set to Balanced, Power Mode set to “Best Power Efficiency”. Processor: Snapdragon 8cx Gen3; 8 Cores; tested on Lenovo X13 Model 21BX0016US , Memory: LPDDR4X 4266 32GB; Storage: Union Memory SSD P/N SSSQL25210 512GB; OS: Windows 11 Pro; 22H2 Version:1000.22000.1165.0; Kernel Version: N3HET86W(1.58 (9-19-2023); Graphics: Adreno integrated GPU; Resolution set to default; Screen Size: 13.3'' 1920 x1200; PC BIOS: N/A; GPU Mode: N/A; OS Power Plan: Preferences->Battery->Power Adaptor->energy mode is set to “Default”; VBS:ON; Defender: ON: Tamper Protection: ON Processor: Apple M3; 8(4performance +4 efficiency); tested on MacBook Pro 14” Model A2918, Memory: LPDDR5 24GB; Storage Brand: Apple, Storage: Apple SSD AP2048Z 2TB; OS: MacOS Version:14.1.1; Kernel Version: Darwin 23.1.0; Graphics: Apple 10 cores integrated GPU; Resolution set to default; Screen Size: 14” 3024x1964 Liquid Retina XDR; PC BIOS: N/A; GPU Mode: N/A; OS Power Plan: Preferences->Battery->Power Adaptor->energy mode is set to “Default”; VBS: N/A; Defender: N/A: Tamper Protection: N/A

Claim # & Statement	Slide # & Title/Details
	26. Three AI Engines
39. Deliver up to 34 TeraOPS	Based on Intel® Core™ Ultra 7 165H processor combined TOPS of CPU, GPU, and NPU engines.
	27. Unmatched Consumer & Commercial Investment for Client AI
40. Unmatched Consumer & Commercial Investment for Client AI	Based on public AI software roadmap releases and/or commitments from AMD, Qualcomm, and Intel as of September 2023.
	28. AI Workflow Performance for Creators
41. Intel® Core™ Ultra processor and the built-in Intel® Arc™ GPU demonstrate winning AI software performance in creative workflows 1.1x performance vs. 13th Gen Intel® Core™ i7 1370P (Wondershare Filmora) 1.7x performance vs. Ryzen 7 7840U (Adobe Premiere Pro) 1.2x performance vs. AMD Ryzen 7 7840U (DaVinci Resolve) 1.5x performance vs. AMD Ryzen 7 7840U (Adobe Lightroom Classic) 3.2x performance vs. AMD Ryzen 7 7840U (Stable Diffusion A1111) 5.4x performance vs. AMD Ryzen 7 7840U (GIMP Stable Diffusion)	Performance results are based on testing as of 11/30/2023. Full Configurations: Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1=28W, 16 Cores; tested on a Intel Internal development system; Memory: LPDDR5-7467 2x16GB Dual Rank Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 22H2 22621.2215; Graphics driver: Pre-production driver ; BIOS :Preproduction BIOS ,Power Plan set to Balanced, Power Mode set to “Best Performance”. Processor: 13th Gen Intel® Core™ i7 1370P processor, 14 Core (6P + 8E); tested on a Intel Internal development system; Memory; Memory: LPDDR5-6000 2x16GB Dual Rank; Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.608, Graphics driver: 30.0.101.4575; BIOS version:RPLPFWI1.R00.3361.A14.2211151548; Power Plan set to Balanced, Power Mode set to “Best Performance”. Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1=28W, 14Core (6P + 8E); tested on a Intel Internal development system; Memory: LPDDR5-7467 2x16GB Dual Rank Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 22H2 22621.2215; Graphics driver:31.0.101.5005; BIOS Version:MTLPFWI1.R00.3323.D93.2310110906,Power Plan set to Balanced, Power Mode set to “Best Performance”. Processor: Lenovo T16 AMD Ryzen 7-PRO-7840U processor Memory: LPDDR5-6400 2x16GB Dual Rank; Storage: Samsung 990 PRO NVMe 1TB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22621.2428 (22H2), Graphics driver: 31.0.14005.8004; BIOS version: 1.13; Power Plan set to Balanced, Power Mode set to “Best Performance”.

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	29. AI Transformative Experiences
42. 1.7x Generative AI Performance	Performance results are based on testing as of 11/30/2023. Full Configurations: Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1=28W, 16 Cores; tested on a Intel Internal development system; Memory: LPDDR5-7467 2x16GB Dual Rank Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 22H2 22621.2215; Graphics driver: Pre-production driver ; BIOS :Preproduction BIOS ,Power Plan set to Balanced, Power Mode set to "Best Performance". Processor: 13th Gen Intel® Core™ i7 1370P processor, 14 Core (6P + 8E); tested on a Intel Internal development system; Memory; Memory: LPDDR5-6000 2x16GB Dual Rank; Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.608, Graphics driver: 30.0.101.4575; BIOS version:RPLPFWI1.R00.3361.A14.2211151548; Power Plan set to Balanced, Power Mode set to "Best Performance".
43. 38% Lower Power in Video Calls	Performance results are based on testing as of 11/30/2023. Full Configurations: Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1=28W, 16 Cores; tested on a Intel Internal development system; Memory: LPDDR5-7467 2x16GB Dual Rank Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 22H2 22621.2215; Graphics driver:31.0.101.4725; BIOS Version:MTLPFWI1.R00.3323.D93.2310110906,Power Plan set to Balanced, Power Mode set to "Best Power Efficiency". Processor: 13th Gen Intel® Core™ i7 1370P processor, 14 Core (6P + 8E); tested on a Intel Internal development system; Memory; Memory: LPDDR5-6000 2x16GB Dual Rank; Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.608, Graphics driver: 30.0.101.4575; BIOS version:RPLPFWI1.R00.3361.A14.2211151548; Power Plan set to Balanced, Power Mode set to "Best Power Efficiency".
44. 2.5x Int8 Power Efficiency	Performance results are based on testing as of 11/30/2023. Full Configurations: Processor: Intel Core Ultra 7 165H Processor (MTL-H) PL1=28W, 16 Cores; tested on a Intel Internal development system; Memory: LPDDR5-7467 2x16GB Dual Rank Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 22H2 22621.2215; Graphics driver: Pre-production driver ; BIOS :Preproduction BIOS ,Power Plan set to Balanced, Power Mode set to "Best Power Efficiency". Processor: 13th Gen Intel® Core™ i7 1370P processor, 14 Core (6P + 8E); tested on a Intel Internal development system; Memory; Memory: LPDDR5-6000 2x16GB Dual Rank; Storage: Samsung PM9A1 NVMe 512GB; Display Resolution: 1920x1080; OS: Microsoft Windows 11 Pro 22H2 22621.608, Graphics driver: 30.0.101.4575; BIOS version:RPLPFWI1.R00.3361.A14.2211151548; Power Plan set to Balanced, Power Mode set to "Best Power Efficiency".

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	30. AI Broad Engine and Data Type Leadership
45. AI Broad Engine and Data Type Leadership	AI model performance demonstrated on a given engine for a given data type substandard or aberrant to the expected performance inferred from analysis of compute or raster operations on the same engine. Example A: GPU raster performance for Intel® Core™ Ultra 7 165H and Ryzen 7 7840U is comparable in testing, but Ryzen GPU int8 performance as measured through the WinML Framework via UL Procyon® AI Inference Test is approximately 1/9th the performance of Intel. Intel cannot project or affirm the appropriate score, but we find it reasonable to conclude that equivalent performance falling to 1/9th rate is unexpected. Example B: Qualcomm 8cx Gen 3 SPECrate*2017_int_base (n-copy) power and performance estimates project multithread CPU compute performance at approximately 30% of Intel® Core™ Ultra 7 165H performance in the same test. However, CPU int8 performance as measured through the WinML Framework via the UL Procyon® AI Inference Test is approximately 1/8th the performance of Intel. Intel cannot project or affirm the appropriate score, but we find it reasonable to conclude that 1/3rd SPECrate*2017_int_base (n-copy) estimates falling to 1/8th performance is unexpected. Cases described as "did not run" conforms with failure to start the test and/or failure to complete the test in the time allotted by the benchmark, resulting in a score of 0 (did not finish). Intel offers these observations in the spirit of facilitating ISV enabling discussions (frameworks, drivers, models) relevant to the AI PC ecosystem. Testing as of 06 December 2023 in UL Procyon® AI Inference Test. Learn more at www.intel.com/PerformanceIndex. Results may vary. Non-performant results are defined as performance figures that are substandard to IP and framework performance demonstrated by the Intel® Core™ Ultra 7 165H processor.

	NPU FP16	NPU Int8	GPU FP16	GPU Int8	CPU FP16	CPU Int8
Intel® Core™ Ultra 7 Processor 165H OpenVINO Framework	270	500	395	611	82	227
Ryzen 7 7840U WinML Framework	DNR	DNR	240	66	42	148
Snapdragon 8cx Gen 3 SNPE Framework (NPU) WinML (CPU+GPU)	DNR	815	DNR	DNR	8	27

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	32. Now Running Local LLaMa2-7B
46. Now Running Local LLaMa2-7B	AI features may require software purchase, subscription or enablement by a software or platform provider, or may have specific configuration or compatibility requirements. Details at www.intel.com/AIPC.
	34. Unmatched Scale & Speed
47. Unmatched Scale & Speed	Based on public AI software roadmap releases and/or commitments from AMD, Qualcomm, and Intel as of September 2023.
48. Targeting 100 AI software partners through 1H24	Rollout view as of 4Q23. AI software release dates are determined by Intel software partners. Release dates are subject to change without notice.
	36. Intel® Core™ Ultra Processor
49. H-Series Key Platform Features	Learn more at ark.intel.com.
50. Intel® Evo™	All Intel® Evo™ designs feature high performing Intel® Core™ CPUs, consistent system responsiveness, premium audio & visual components, broad ecosystem compatibility, sleek form factor innovations, optional touch screen and connectivity solutions. Intel's comprehensive laptop innovation program Project Athena ensures all designs with the Intel Evo brand have been tested, measured and verified against a premium specification and key experience indicators. Individual system results may vary. See www.intel.com/performance-evo for details.
51. Intel vPro®	All versions of the Intel vPro® platform require an eligible Intel processor, a supported operating system, Intel LAN and/or WLAN silicon, firmware enhancements, and other hardware and software necessary to deliver the manageability use cases, security features, system performance and stability that define the platform. See intel.com/performance-vpro for details.
52. Intel® Thread Director	See claim #8.
53. 1x8 PCIe Gen5	1x8 PCIe Gen5 available on Intel® Core™ Ultra processor H-series systems only.
54. Intel® Wi-Fi 7 (5Gig)/ Intel® Wi-Fi 6E (Gig+)	Based on the latest draft 802.11be specification's theoretical maximum data rate for 2x2 devices. While Wi-Fi 7 is backward compatible with previous generations, new Wi-Fi 7 features require PCs configured with Intel Wi-Fi 7 solutions, PC OEM enabling, operating system support, and use with appropriate Wi-Fi 7 routers/APs/gateways. 6 GHz Wi-Fi 7 may not be available in all regions. Performance varies by use, configuration, and other factors. For details on performance claims, learn more at www.Intel.com/performance-wireless.
	37. Leading Platform Technologies
55. Leading Platforms Technologies	Learn more at intel.com/performanceindex (connectivity). Results may vary.
	38. Intel® Core™ Ultra Processors
56. SKU table	Learn more at ark.intel.com.

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	39. Available beginning Dec. 14
57. Intel® Evo™	See claim #50.
58. Intel vPro®	See claim #51.
	41. Intel® Core™ Ultra Processor
59. Up to 11% more CPU compute than Ryzen in an ultrathin PC	See claim #10.
60. Performance Hybrid Architecture	See claim #1.
61. Up to 70% faster generative AI with GPU and NPU offload	See claim #42.
62. Up to 16 cores and 22 threads for ultrathin	Learn more at ark.intel.com.
63. Intel® Wi-Fi 7 (5Gig)	See claim #54.
64. Streaming video power reduced by 25% with LP E-cores	See claim #11.
65. Built-in Intel® Arc™ GPU	See claim #4.
66. Up to 2X gaming performance vs. 13th Gen Intel® Core™ i7 processor at 1080p	See claim #29.

Notices & Disclaimers

Performance varies by use, configuration and other factors. Learn more at www.intel.com/PerformanceIndex.

Performance results are based on testing as of dates shown in configurations and may not reflect all publicly available updates. See backup for configuration details.

AI features may require software purchase, subscription or enablement by a software or platform provider, or may have specific configuration or compatibility requirements. Details at www.intel.com/AIPC.

Results that are based on pre-production systems and components as well as results that have been estimated or simulated using an Intel Reference Platform (an internal example new system), internal Intel analysis or architecture simulation or modeling are provided to you for informational purposes only. Results may vary based on future changes to any systems, components, specifications or configurations.

Your costs and results may vary. No product or component can be absolutely secure. Intel technologies may require enabled hardware, software or service activation.

All product plans and roadmaps are subject to change without notice.

Performance hybrid architecture combines two core microarchitectures, Performance-cores (P-cores) and Efficient-cores (E-cores), on a single processor die first introduced on 12th Gen Intel® Core™ processors. Select 12th Gen and newer Intel® Core™ processors do not have performance hybrid architecture, only P-cores or E-cores, and may have the same cache size. See ark.intel.com for SKU details, including cache size and core frequency.

Intel® Arc™ GPU only available on select H-series Intel® Core™ Ultra processor-powered systems with at least 16GB of system memory in dual channel configuration. OEM enablement required; check with OEM or retailer for system configuration details.

Built into the hardware, Intel® Thread Director is provided only in performance hybrid architecture configurations of 12th Gen or newer Intel® Core™ processors; OS enablement is required. Available features and functionality vary by OS.

While Wi-Fi 7 is backward compatible with previous generations, new Wi-Fi 7 features require PCs configured with Intel Wi-Fi 7 solutions, PC OEM enabling, operating system support, and use with appropriate Wi-Fi 7 routers/APs/gateways. 6 GHz Wi-Fi 7 may not be available in all regions. Performance varies by use, configuration, and other factors. For details on performance claims, learn more at www.Intel.com/performance-wireless.

it
starts
with