ANNOUNCED TODAY: JUNE 10, 2020 AT 8:00 AM PDT

TODAY’S SPEAKER:
Ram Naik, Product Director, Intel Client Computing Group

AGENDA:
Presentation - 20 minutes, all participants muted
Q&A - 10 minutes

QUESTIONS:
Type your name, media affiliation and question into the Skype chat tool, and you will be entered into the queue during the Q&A portion of this call.

For follow-up questions after the briefing, please contact daniel.francisco@intel.com
WHAT’S BEING ANNOUNCED

• **New!** Intel® Core™ i5 and i3 processors with Intel® Hybrid Technology tailored for new PC experiences

• **The First!** Intel Core processors with Intel’s Foveros 3D stacking technology and hybrid CPU architecture

• **The Smallest!** Core™ processor with full Windows 10 compatibility and Intel® Core™ performance
INTEL® CORE™ PROCESSORS WITH INTEL® HYBRID TECHNOLOGY

REDEFINING THE FUTURE OF THE PC
INTEL® CORE™ PROCESSORS WITH INTEL® HYBRID TECHNOLOGY

OBJECTIVE: SOC FOR A NEW CLASS OF COMPUTE FOR A NEW CATEGORY OF DEVICES

- 12x12 package
- Form factors ≥ 8” screen
- Premium performance, Windows 32bit/64bit
- Graphics @ low power
- Very low Standby Power, Always Connected

FOVEROS TECHNOLOGY

INTEL HYBRID PROCESSOR
INTEL® CORE™ PROCESSORS WITH INTEL® HYBRID TECHNOLOGY
FIRST HYBRID X86 ARCHITECTURE WITH FOVEROS

On Package Memory for small form factors

P1274 -- 10nm compute die

P1222 – low cost, low leakage process for base die

FOVEROS PACKAGING
Enabling Ultra Mobile Form Factor
(12mm x 12mm x 1mm)
INTEL® CORE™ PROCESSORS WITH INTEL® HYBRID TECHNOLOGY
FIRST HYBRID X86 ARCHITECTURE WITH FOVEROS

HYBRID CPU ARCHITECTURE
Tremont for background activity
Sunny Cove for foreground tasks

HARDWARE GUIDED SCHEDULING
OS integration for prioritizing tasks
optimizing power and performance

* HIGHER WEB PERFORMANCE
* BY ADDING SUNNYCOVE CORE TO 4 TREMONT CORES

UPTO 33% 7

UPTO 17% 8

*HIGHER POWER EFFICIENCY

33%

17%
INTEL® CORE™ PROCESSORS WITH INTEL® HYBRID TECHNOLOGY

- **56%** \(^1\) \(\uparrow\) SMALLER PACKAGE SIZE
- **91%** \(^2\) \(\downarrow\) LOWER STANDBY POWER
- **12%** \(^4\) \(\uparrow\) HIGHER SINGLE THREADED PERFORMANCE
- **24%** \(^3\) \(\uparrow\) HIGHER POWER EFFICIENCY
- **1.7X** \(^5\) \(\uparrow\) HIGHER GRAPHICS PERFORMANCE
- **>2X** \(^6\) \(\uparrow\) THROUGHPUT ON INTEL® UHD GRAPHICS FOR AI WORKLOADS

**SMALLEST PROCESSOR TO DELIVER INTEL® CORE™ PERFORMANCE AND COMPATIBILITY**

For more complete information about performance and benchmark results, visit intel.com/benchmarks.
INTEL® CORE™ PROCESSORS WITH INTEL® HYBRID TECHNOLOGY

Galaxy Book S
Availability:
June 2020

Lenovo X1 Fold
Availability:
2H 2020
## INTEL® CORE™ PROCESSORS WITH INTEL® HYBRID TECHNOLOGY

<table>
<thead>
<tr>
<th>PROCESSOR NUMBER</th>
<th>BASE CLOCK SPEED (GHZ)</th>
<th>INTEL® TURBO BOOST TECHNOLOGY 2.0 MAXIMUM SINGLE CORE TURBO FREQUENCY (GHZ)</th>
<th>CORES/THREADS</th>
<th>Graphics (Gen11)</th>
<th>SCENARIO DESIGN POWER</th>
<th>INTEL® SMART CACHE</th>
<th>MEMORY SUPPORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel® Core™ i5-16G7</td>
<td>1.4</td>
<td>3.0</td>
<td>5/5</td>
<td>Intel® UHD Graphics</td>
<td>7W</td>
<td>4 MB</td>
<td>LPDDR4X-4267</td>
</tr>
<tr>
<td>Intel® Core™ i3-13G4</td>
<td>0.8</td>
<td>2.8</td>
<td>5/5</td>
<td>Intel® UHD Graphics</td>
<td>7W</td>
<td>4 MB</td>
<td>LPDDR4X-4267</td>
</tr>
</tbody>
</table>

Intel® processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. All processors are lead-free (per EU RoHS directive July 2006) and halogen free (residual amounts of halogens are below November 2007 proposed IPC/JEDEC J-STD-709 standards). All processors support Intel® Virtualization Technology (Intel® VT-x). *Other names and brands may be claimed as the property of others.*
**LEGAL DISCLAIMERS**

- All information provided here is subject to change without notice. Contact your Intel representative to obtain the latest Intel product specifications, roadmaps, and related information.

- Testing concluded end of April 2020 and may not reflect all publicly available updates. See configuration disclosure for details. No product can be absolutely secure.

- Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors.

- Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products.

- For more complete information about performance and benchmark results, visit http://www.intel.com/benchmarks

- Your costs and results may vary.

- Intel technologies may require enabled hardware, software or service activation.

- Intel contributes to the development of benchmarks by participating in, sponsoring, and/or contributing technical support to various benchmarking groups, including the BenchmarkXPRT Development Community administered by Principled Technologies.

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PERFORMANCE DISCLAIMERS

Testing done by Intel as of April 2020:

1. Up to 56% smaller package area and up to 47% smaller board size: Intel® Core™ i5-L16G7 compared to Intel® Core™ i7 8500Y processor
2. Up to 91% reduction in standby power: Intel® Core™ i5-L16G7 compared to Intel® Core™ i7-8500Y
3. As measured by WebXPRT*3 score per Watt on Intel® Core™ i5-L16G7 vs. Intel® AML-Y22 Core™ i7-8500Y
4. As measured by SPEC* CPU2006 on Intel® Core™ i5-L16G7 vs. Intel® AML-Y22 Core™ i7-8500Y
5. As measured by 3DMark* 11 on Intel® Core™ i5-L16G7 vs. Intel® AML-Y22 Core™ i7-8500Y
6. As measured by MLPerf v0.5 Inference with Offline Scenario using OpenVINO 2020.R2 framework Closed ResNet50-v1.5 offline FP16 GPU (Batch=128) on Intel® Core™ i5-L16G7 vs. Intel® AML-Y22 Core™ i7-8500Y
7. As measured by WebXPRT*3 score on Intel® Core™ i5-L16G7 with Sunny Cove on and off
8. As measured by WebXPRT*3 score per Watt on Intel® Core™ i5-L16G7 with Sunny Cove on and off
**WORKLOAD DISCLAIMERS**

- **WebXPRT 3** is a benchmark from Principled Technologies that measures JavaScript/HTML5 performance using web applications based on real world usages, like Photo Enhancement, Organize Album Using AI, Stock Option Pricing, Encrypt Notes and OCR Scan, Sales Graphs, and Online Homework. It produces results for each of the test scenarios plus an overall score.

- **SPEC CPU2006** is a benchmark from the SPEC consortium that measures device performance and throughput using compute intensive application subtests. SPECint* _base2006_ measures how fast a device completes a single integer compute task. SPECint* _rate_base2006_ measures throughput, or how many integer compute tasks a device can accomplish in a given amount of time.

- **3DMark* NightRaid** is a DX12 benchmark for Laptops, notebooks, tablets and other mobile computing devices with integrated graphics. 3DMark Night Raid includes two Graphics Tests, A CPU Test and a Demo. The Graphics tests are designed to stress the GPU while minimizing the CPU workload to ensure the CPU performance is not a limiting factor. The Graphics test measure GPU Performance, with test 1 using deferred rendering, while test 2 uses forward rendering. The CPU test is designed to stress the CPU while minimizing GPU load to ensure the GPU performance is not a limiting factor. The CPU performance uses advanced instruction sets up to AVX2 if supported and the SSSE3 code path. For Windows 10 on ARM the CPU Test uses the NEON instruction set. The demo does not affect the score.

- **3DMark 11** is a benchmark from Futuremark* that measures DX 11 gaming performance. There are four DX 11 graphics tests with three quality presets: Entry, Performance, Extreme. Reported metrics: Graphics Score (GPU), Physics Score (CPU), Combined Score (GPU & CPU) and an overall 3DMark Score (higher is better for all Scores). Scaling efficiencies: Graphics tests are GPU dominant, sensitive to graphics and CPU frequency, core count and memory. OS support: Desktop Windows.

- **MLPerf v0.5 Inference with Offline Scenario using OpenVINO 2020.R2 framework** is a benchmark suite for measuring how fast systems can process inputs and produce results using a trained model on Intel® UHD graphics.
SYSTEM CONFIGURATION

• Processor: Intel® Core™ i5-L16G7 processor (LFK) PL1=7W TDP, 5C5T, Memory: 2X4GB LPDDR4x - 4267MHz, Storage: Intel® 760p m.2 PCIe NVMe SSD, Display Resolution: 1920x1080 for Performance; 25x14 eDP 13.3”, OS: Windows 10 19H2 (18363.535), Graphics driver: 26.20.100.7916

• Processor: Intel® Core™ i7-8500Y processor(AML-Y 22), PL1=5.0W TDP, 2C4T, Turbo up to 4.2GHz, Memory: 2x4GB LPDDR3-1866, Storage: Intel® 760p SSD, Display Resolution:1920x1080, Windows 10 Build RS3 17134.112, Graphics driver:whl.1006167-v2