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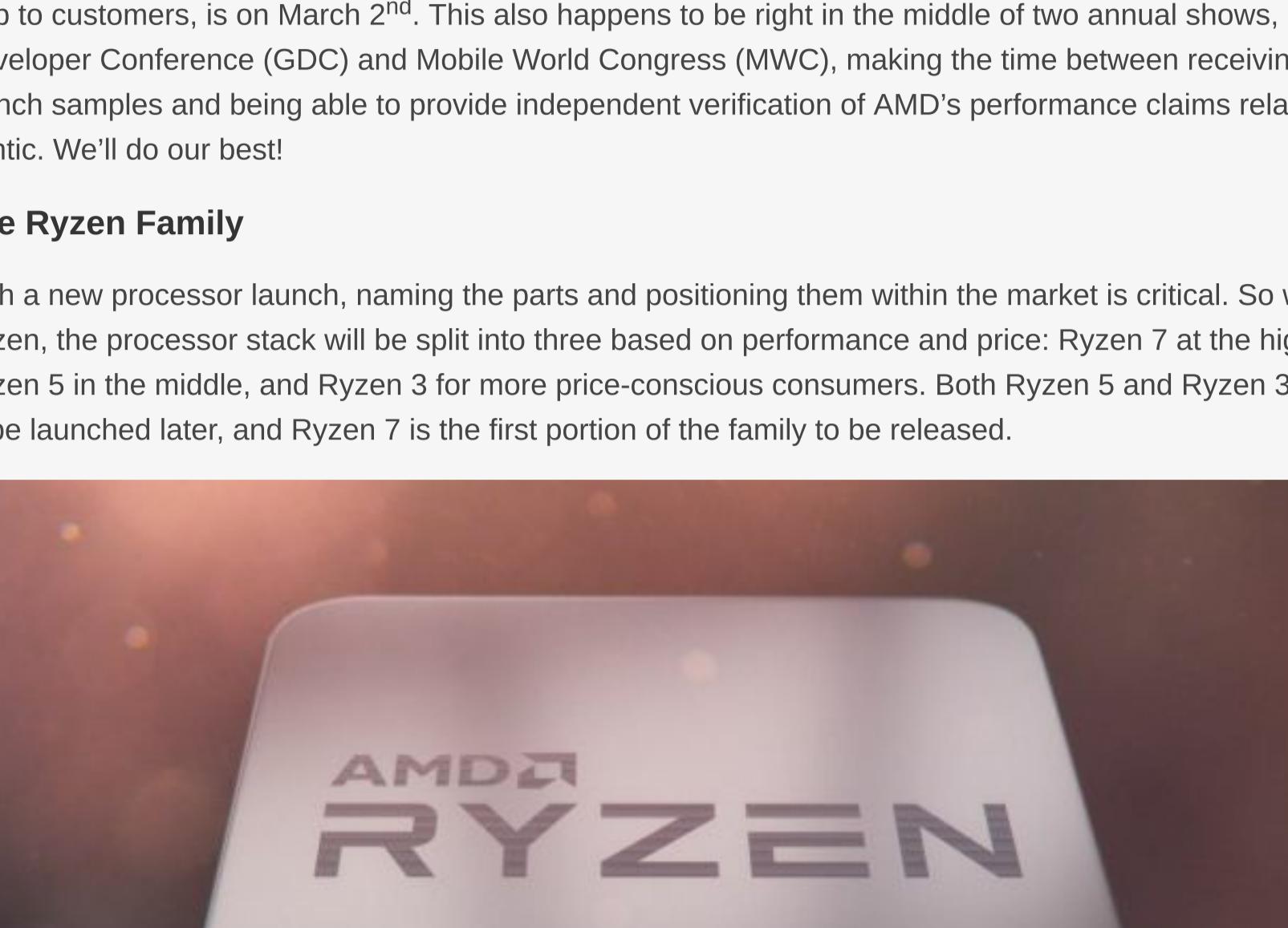
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AMD Launches Ryzen: 52% More IPC, Eight Cores for Under \$330, Pre-order Today, On Sale March 2nd

by Ian Cutress on February 22, 2017 9:00 AM EST

Posted in CPUs AMD Ryzen 7 1800X 1700X 1700

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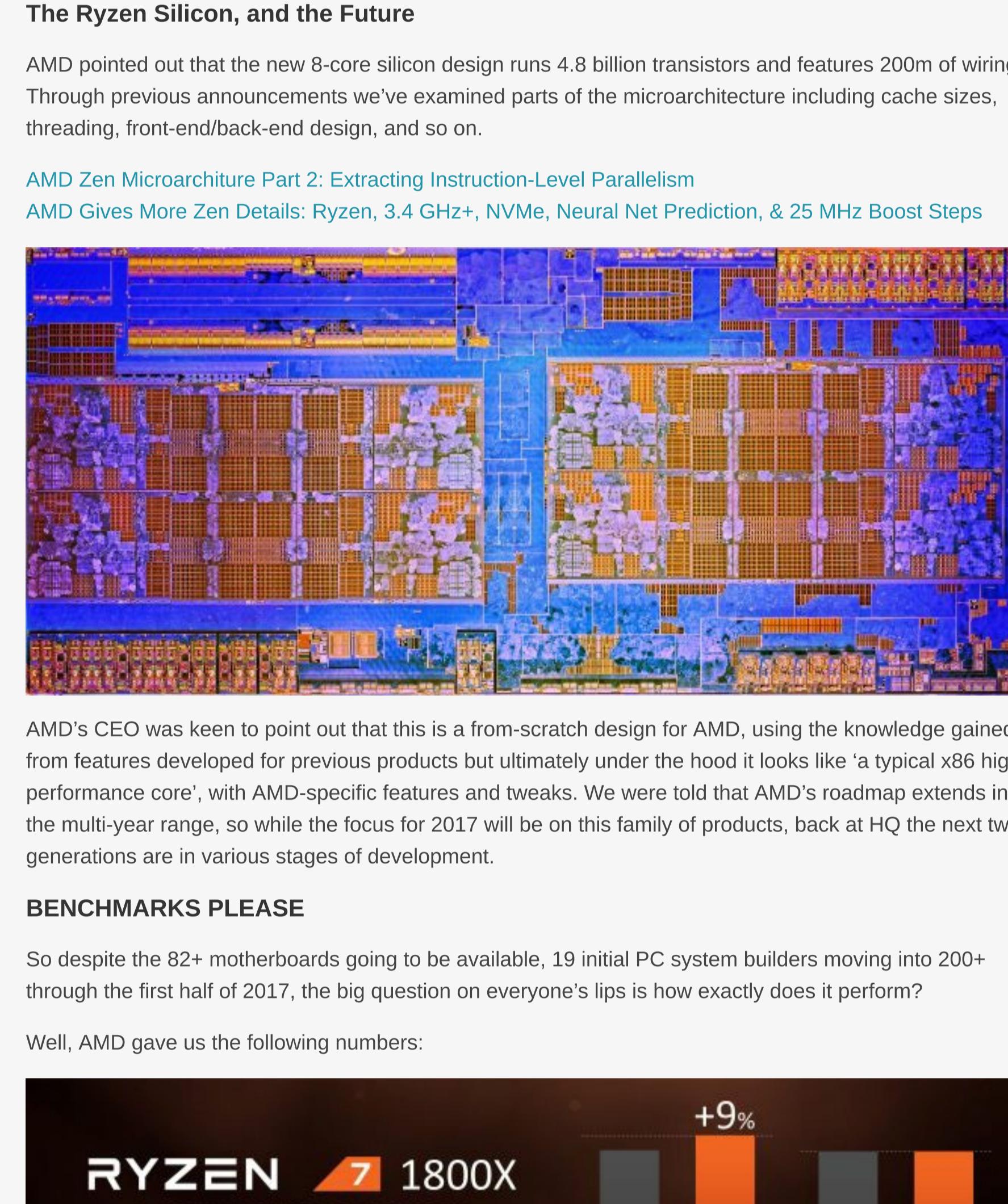


The biggest x86 launch for AMD in five years is today: Ryzen is here. As always before a major launch, AMD gives a 'Tech Day' for relevant press and analysts, and through this event AMD's CEO, Dr. Lisa Su lifted the lid on one of the most anticipated products in the semiconductor industry. AMD knows how to control the level of enthusiasm for its fans, and today is the end result, with processors going on pre-order from major retailers today at 1pm EST, ready for a general hard launch on March 2nd.

In a similar vein to launches of recent smartphones, AMD is doing a staggered announcement/launch with the products on their new microarchitecture. Where Samsung/Apple might give all the details for a product a few weeks before it's available to buy, today on February 22nd marks the day where AMD is giving consumers information about Ryzen, and specifically the Ryzen 7 family of eight-core products. All the information today is from AMD, and AMD's internal testing, and pre-orders also start from today for users ready to put down their money for a launch day part. Reviews of the CPUs, as well as when the CPUs will ship to customers, is on March 2nd. This also happens to be right in the middle of two annual shows, Game Developer Conference (GDC) and Mobile World Congress (MWC), making the time between receiving pre-launch samples and being able to provide independent verification of AMD's performance claims relatively frantic. We'll do our best!

**The Ryzen Family**

With a new processor launch, naming the parts and positioning them within the market is critical. So with Ryzen, the processor stack will be split into three based on performance and price: Ryzen 7 at the high end, Ryzen 5 in the middle, and Ryzen 3 for more price-conscious consumers. Both Ryzen 5 and Ryzen 3 are set to be launched later, and Ryzen 7 is the first portion of the family to be released.



Ryzen 7 will have three CPUs to start, all having eight cores and supporting simultaneous multi-threading:

- Ryzen 7 1800X: 8C/16T, 3.6 GHz base, 4.0 GHz turbo, 95W, \$499
- Ryzen 7 1700X: 8C/16T, 3.4 GHz base, 3.8 GHz turbo, 95W, \$399
- Ryzen 7 1700: 8C/16T, 3.0 GHz base, 3.7 GHz turbo, \$329

Ryzen 7 1800X will be the high-end part, featuring a base clock of 3.6 GHz and a turbo of 4.0 GHz, within a TDP of 95W, and for \$499. Next to this is Ryzen 7 1700X, launching at \$399, with a base/turbo of 3.4/3.8 GHz. The final part for the launch is the Ryzen 7 1700, providing eight cores and sixteen threads for \$329 at 3.0/3.7 GHz frequencies.

Processors will initially be available for pre-order from 185 retailers and OEMs worldwide, either as individual parts or pre-built systems.

**What, not 40% IPC? 52% IPC??**

Enthusiasts and analysts use the term IPC, or 'Instructions Per Clock', as a measure of how much the underlying microarchitecture improves from generation to generation. Two decades ago, a good design on a smaller node could net a healthy double-digit gain, whereas in recent years 5-10% gain has become the norm. When AMD initially announced that the new Zen microarchitecture they were developing was aiming for a 40% IPC gain, despite the low IPC they were starting from, users remained skeptical. AMD rehired Jim Keller to work alongside long-term AMD architect Mike Clark and produce a team with several goals in mind: high-performance x86, simultaneous multithreading, and a product to be relevant in the computing, PC, server and mobile space again. So despite this, 40% IPC actually seemed a somewhat lofty goal, because Bulldozer was so overwhelming, and despite this low starting point. For the Ryzen launch today, AMD is stating that the final result of that goal is a 52% gain in IPC.



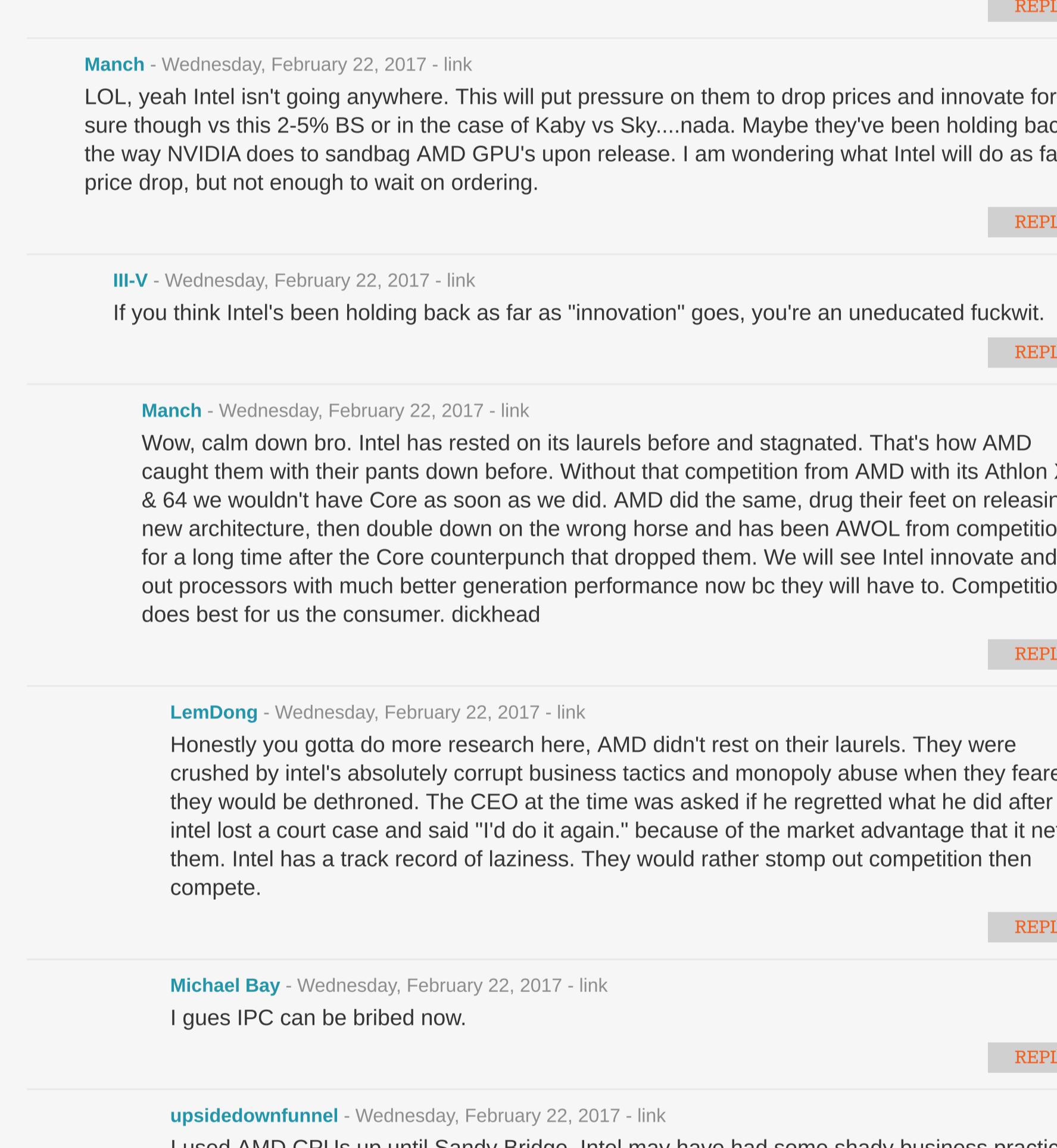
This is something we will need to test in due course!

**The Ryzen Silicon, and the Future**

AMD pointed out that the new 8-core silicon design runs 4.8 billion transistors and features 200m of wiring. Through previous announcements we've examined parts of the microarchitecture including cache sizes, threading, front-end/back-end design, and so on.

**AMD Zen Microarchitecture Part 2: Extracting Instruction-Level Parallelism**

AMD Gives More Zen Details: Ryzen, 3.4 GHz+, NVMe, Neural Net Prediction, & 25 MHz Boost Steps

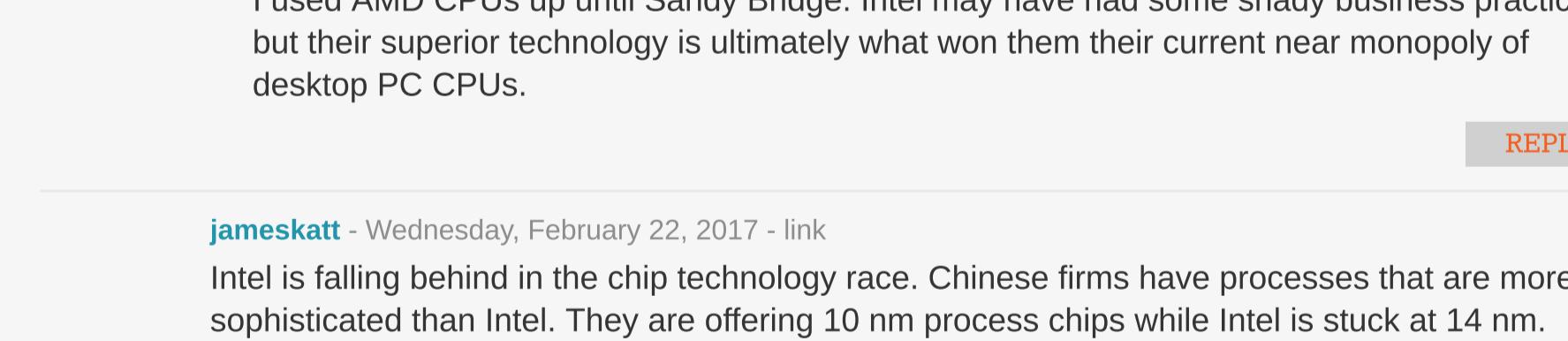


AMD's CEO was keen to point out that this is a from-scratch design for AMD, using the knowledge gained from features developed for previous products but ultimately under the hood it looks like a typical x86 high-performance core, with AMD-specific features and tweaks. We were told that AMD's roadmap extends into the multi-year range, so while the focus for 2017 will be on this family of products, back at HQ the next two generations are in various stages of development.

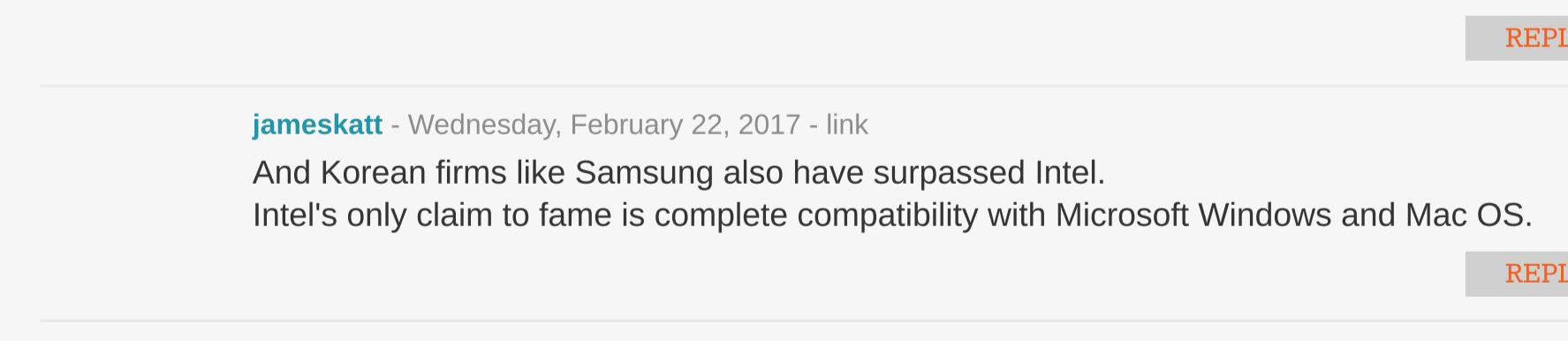
**BENCHMARKS PLEASE**

So despite the 82+ motherboards going to be available, 19 initial PC system builders moving into 200+ through the first half of 2017, the big question on everyone's lips is how exactly does it perform?

Well, AMD gave us the following numbers:



AMD's benchmarks showed that the top Ryzen 7 1800X, compared to the 8-core Intel Core i7-6900K, both at out-of-the-box frequencies, gives an identical score on the single threaded test and a +9% in the multi-threaded test. AMD put this down to the way their multi-threading works over the Intel design. Also, the fact that the 1800X is half the price of the i7-6900K.



In a similar vein, again with the Cinebench 15 multi-threaded test, the Ryzen 7 1700X scores over and above the Core i7-6800K (its price competition) and higher than the Core i7-6900K which costs 2.5 times as much.

We'll tell you what our benchmarks say, with official retail processors. But you will have to wait until March 2nd. Sorry.

**Gallery: Ryzen Launch Announcement Slide Deck**



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lilmo - Wednesday, February 22, 2017 - link  
bah bye Intel

nathandrews - Wednesday, February 22, 2017 - link  
Hardly. If we're lucky, we'll get a price war.

Manch - Wednesday, February 22, 2017 - link  
LOL, yeah Intel isn't going anywhere. This will put pressure on them to drop prices and innovate for sure though vs this 2.5% BS or in the case of Kaby vs Sky...nada. Maybe they've been holding back the way NVIDIA does to sandbag AMD GPU's upon release. I am wondering what Intel will do as far as price drop, but not enough to wait on that.

III-V - Wednesday, February 22, 2017 - link  
If you think Intel's been holding back as far as "innovation" goes, you're an uneducated fuckwit.

Manch - Wednesday, February 22, 2017 - link  
Wow, calm down bro. Intel has rested on their laurels before and stagnated. That's how AMD won over us we wouldn't have Core as soon as we did. AMD did the same, drug their feet on releasing a new architecture, then double down on the wrong horse and has been AWOL from competition for a long time after the Core counterpart that dropped them. We will see Intel innovate and put out processors with much better generation performance now bc they will have to. Competition does best for us the consumer. dickhead

LemDong - Wednesday, February 22, 2017 - link  
Honestly you gotta do more research here, AMD didn't rest on their laurels. They were crushed by intel's absolutely corrupt business tactics and monopoly abuse when they feared they would be dethroned. The CEO at the time was asked if he regretted what he did after intel lost a court case and said "I'd do it again." because of the market advantage that it had.

Michael Bay - Wednesday, February 22, 2017 - link  
I guess IPC can be bribed now.

upsidedownfunnel - Wednesday, February 22, 2017 - link  
I used AMD CPUs up until Sandy Bridge. Intel may have had some shady business practices, but their superior technology is ultimately what won them their current near monopoly of desktop PC CPUs.

jameskatt - Wednesday, February 22, 2017 - link  
Intel is failing behind in the chip technology race. Chinese firms have processes that are more sophisticated than Intel. They are offering 10 nm process chips while Intel is stuck at 14 nm.

jameskatt - Wednesday, February 22, 2017 - link  
And Korean firms like Samsung also have surpassed Intel. Intel's only claim to fame is complete compatibility with Microsoft Windows and Mac OS.

1 2 3 4 5 6 17

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Razer Blade Gets Core i7-7700HQ, Adds 4K Touchscreen, 1 TB SSD Options

**TWEETS**

IanCutress: @Dresdenboy @ryanshout I have a better picture, didn't have time to dig it out before getting on the plane

IanCutress: @TMechFool when you're leading, it's hush hush. When you're 'new', it's about enticing customers

IanCutress: @Steve\_IW\_66 I wrote it while hurtling towards a flight, just made it through security! Will try and add detail, I think links active at 1pm

IanCutress: Tip @Techmemem https://t.co/0QWUEfIv

IanCutress: RT @GFXChipTweeter: @TheKanter @ServeTheHome @IanCutress https://t.co/B7eyVjAG5

RyanSmithAT: @dankbaker it may be a bit of a longshot, but @Razer has an office not 2 blocks from Moscow. They may be able to give you a hand

RyanSmithAT: Everyone has their opinion on #WWDC17. I for one am happy it's in San Jose. Easier to get in and out of, and to get work done.

RyanSmithAT: @chrishinenen e.g. "Like this post if you like ice cream!" Edit 5 min later: "Like this post if you like Brussels sprout!"

RyanSmithAT: @chrishinenen Yes. Because people can quote it and reply to it immediately. Otherwise you could change the context

ganeshis: @MikeDemler Would be interesting to see where the INTC-MBLY partnership fits in the picture.

ganeshis: Great decision! If it ain't broke, don't fix it https://t.co/CzEaJdQH

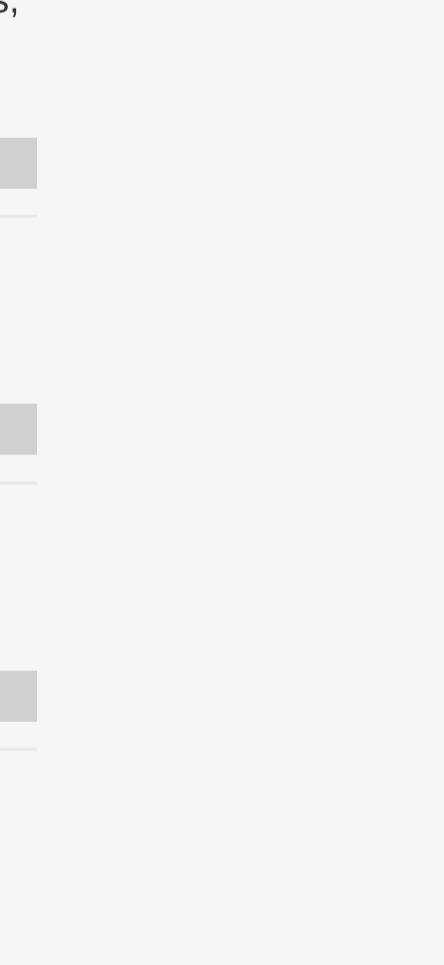
RyanSmithAT: @Taki\_San Yes, @JoshuaH096 is still working on it

ganeshis: @Omonorovo @IanCutress For personal 4K content, Q5 decoder in LAV Filters / MPC-HC and display via dGPU possible. No HDCP required.

ganeshis: @Omonorovo @IanCutress HDCP 2.2 required only for 4K Netflix / Blu-ray. Requires both decode & display to be KBL. dGPU not supported YET.

ganeshis: @krishnavatto @magic silicon You are off by a factor of 10^4, but, yes, costs are prohibitive for small vendors

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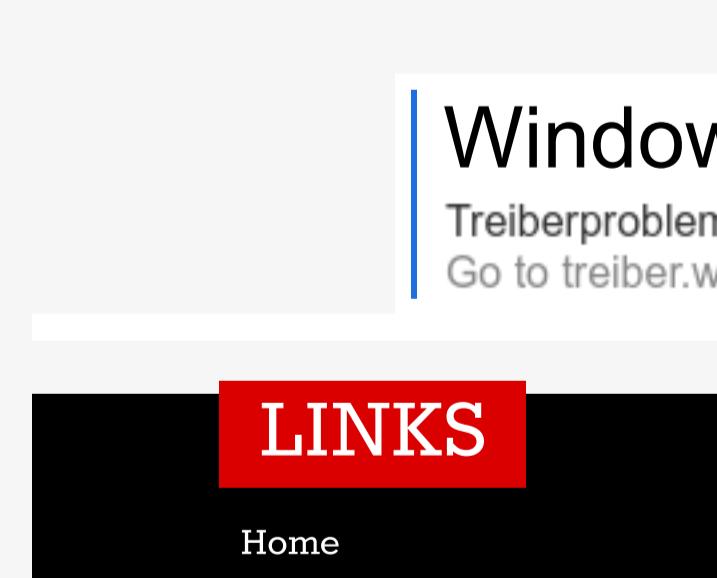
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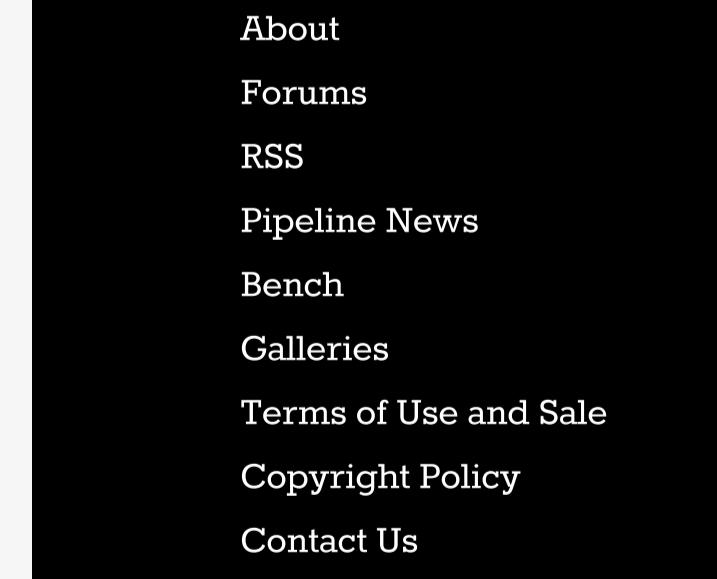
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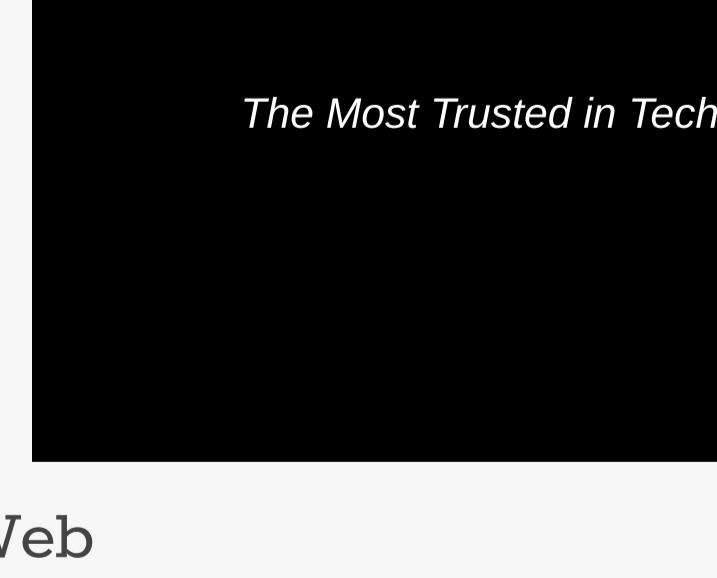
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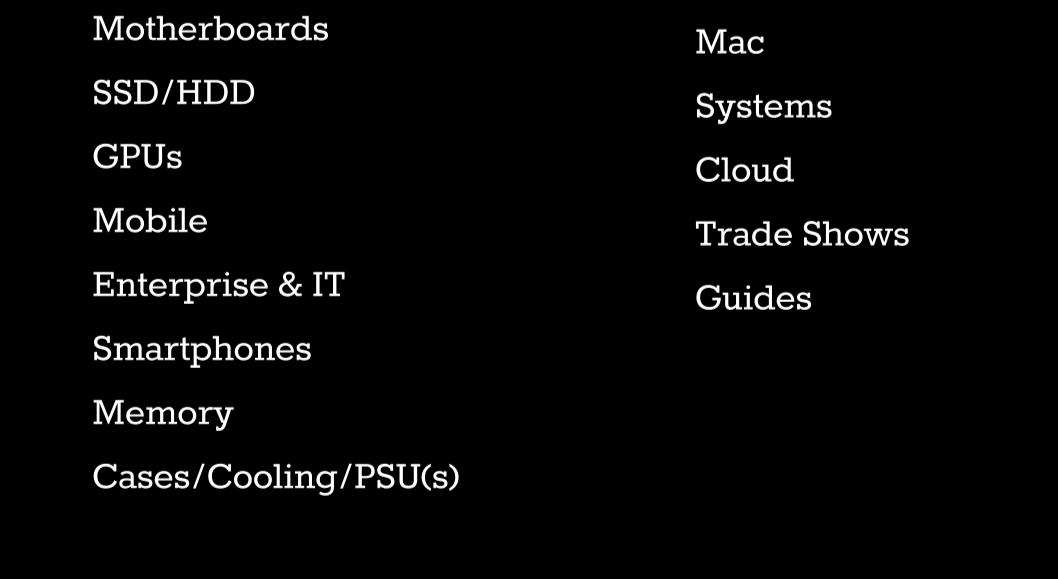
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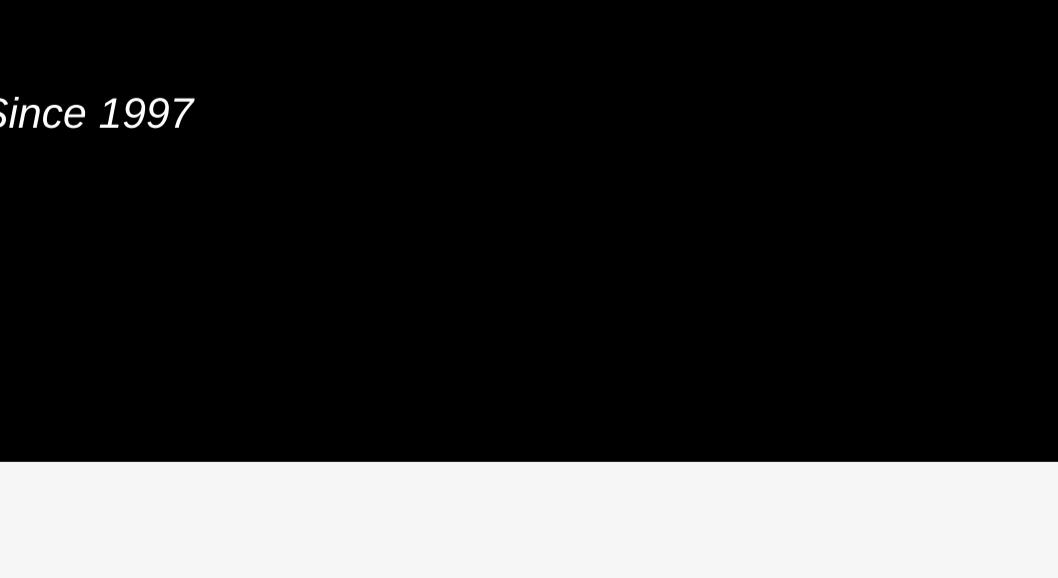
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