



FINANCIAL ANALYST DAY 2020

FUTURE OF HIGH PERFORMANCE

MARK PAPERMASTER

CTO & EVP, Technology & Engineering

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This presentation contains forward-looking statements concerning Advanced Micro Devices, Inc. (AMD) such as AMD's expectations regarding the number of "Zen" cores shipped beyond 2019; AMD's expected technology investments over the next five years; AMD's CPU technology roadmap; expectations regarding foundry process technology; expectations regarding packaging; features, functionality, availability, timing, deployment, expectations, benefits of AMD's 3rd Generation Infinity Architecture, "X3D" packaging and future exascale systems; expectations regarding accelerated computing; expectations regarding roadmap for compute efficiency gains, process and packaging deployment, time to market through innovating execution and exascale high performance driving the next wave of innovation, which are made pursuant to the Safe Harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements are commonly identified by words such as "would," "may," "expects," "believes," "plans," "intends," "projects" and other terms with similar meaning. Investors are cautioned that the forward-looking statements in this presentation are based on current beliefs, assumptions and expectations, speak only as of the date of this presentation and involve risks and uncertainties that could cause actual results to differ materially from current expectations. Such statements are subject to certain known and unknown risks and uncertainties, many of which are difficult to predict and generally beyond AMD's control, that could cause actual results and other future events to differ materially from those expressed in, or implied or projected by, the forward-looking information and statements. Material factors that could cause actual results to differ materially from current expectations include, without limitation, the following: Intel Corporation's dominance of the microprocessor market and its aggressive business practices; the ability of third party manufacturers to manufacture AMD's products on a timely basis in sufficient quantities and using competitive technologies; expected manufacturing yields for AMD's products; AMD's ability to introduce products on a timely basis with features and performance levels that provide value to its customers while supporting and coinciding with significant industry transitions; AMD's ability to generate sufficient revenue and operating cash flow or obtain external financing for research and development or other strategic investments; the loss of a significant customer; AMD's ability to generate revenue from its semi-custom SoC products; global economic uncertainty; political, legal and economic risks, natural disasters, and public health risks, including the impact of COVID-19; government actions and regulations such as export administration regulations, tariffs and trade protection measures may limit our ability export our products to certain customers; potential security vulnerabilities; potential IT outages, data loss, data breaches and cyber-attacks; the ability of GLOBALFOUNDRIES Inc. to satisfy AMD's manufacturing requirements; uncertainties involving the ordering and shipment of AMD's products; quarterly and seasonal sales patterns; the restrictions imposed by agreements governing AMD's notes and the secured credit facility; the competitive markets in which AMD's products are sold; the potential dilutive effect if the 2.125% Convertible Senior Notes due 2026 are converted; the market conditions of the industries in which AMD products are sold; AMD's reliance on third-party intellectual property to design and introduce new products in a timely manner; AMD's reliance on third-party companies for the design, manufacture and supply of motherboards, software and other computer platform components; AMD's reliance on Microsoft Corporation and other software vendors' support to design and develop software to run on AMD's products; AMD's reliance on third-party distributors and add-in-board partners; future impairments of goodwill and technology license purchases; AMD's ability to attract and retain qualified personnel; AMD's indebtedness; AMD's ability to generate sufficient cash to service its debt obligations or meet its working capital requirements; AMD's ability to repurchase its outstanding debt in the event of a change of control; the cyclical nature of the semiconductor industry; the impact of acquisitions, joint ventures and/or investments on AMD's business; the impact of modification or interruption of AMD's internal business processes and information systems; the availability of essential equipment, materials or manufacturing processes; compatibility of AMD's products with some or all industry-standard software and hardware; costs related to defective products; the efficiency of AMD's supply chain; AMD's ability to rely on third party supply-chain logistics functions; AMD's stock price volatility; worldwide political conditions; unfavorable currency exchange rate fluctuations; AMD's ability to effectively control the sales of its products on the gray market; AMD's ability to adequately protect its technology or other intellectual property; current and future claims and litigation; potential tax liabilities; and environmental laws, conflict minerals-related provisions and other laws or regulations. Investors are urged to review in detail the risks and uncertainties in AMD's Securities and Exchange Commission filings, including but not limited to AMD's Annual Report on Form 10-K for the year ended December 28, 2019.

THE WORKLOADS OF THE FUTURE REQUIRE INCREDIBLE AMOUNTS OF COMPUTE POWER



SUPERCOMPUTING



CLOUD, HYPERSCALE
& VIRTUALIZATION



AI & ANALYTICS
EVERYWHERE



VISUALIZATION



GAMING



SMARTER CLIENT
DEVICES

THE LAST FIVE YEARS KEY INVESTMENTS

Engineering
Execution

7nm Process
Technology

“Zen” CPU
Core Generations

Next Gen
GPU Architecture

Infinity Fabric™ &
Modular Chip Design

FOCUSED EXECUTION RE-ENGINEERED DELIVERY

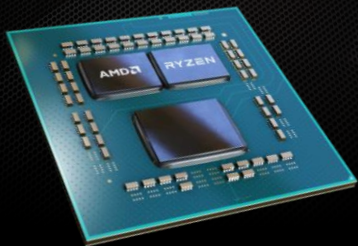
CPU & GPU
Leapfrogging
Design Teams

Modular IP Improved
Design Efficiency

Pioneered New Design
Simulation Environment

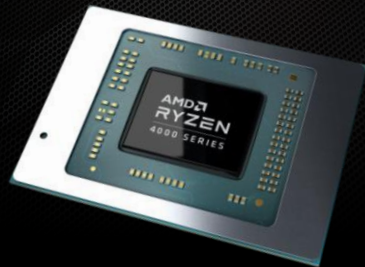
Hardware/Software
Co-design for
Optimized Solutions

COMPREHENSIVE 7nm PORTFOLIO



**AMD
RYZEN**

3rd Generation
AMD Ryzen™
Desktop Family



**AMD
RYZEN**
MOBILE PROCESSORS

3rd Generation
AMD Ryzen™ Mobile
U, H, & PRO Family



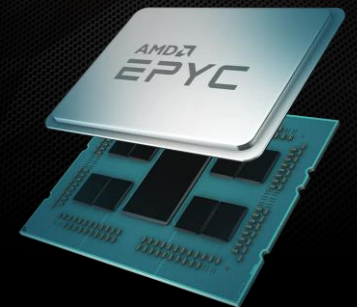
**AMD
RYZEN**
THREADRIPPER

3rd Generation
AMD Ryzen Threadripper™
High-End Desktop Family



**AMD
RADEON**

Gaming, Workstation,
& Data Center
Product Families



**AMD
EPYC**

2nd Generation
AMD EPYC™
Data Center CPU Family

MORE THAN 20 7nm PRODUCTS



“ZEN 2” CORE ARCHITECTURE

FASTER, HIGHER PERFORMANCE, WITH LOWER POWER CONSUMPTION
FOR SERVERS, NOTEBOOKS & DESKTOPS

World's First
High-performance
x86 7nm CPU

Revolutionary Chiplet
Design Delivers More
Cores at the Same Power

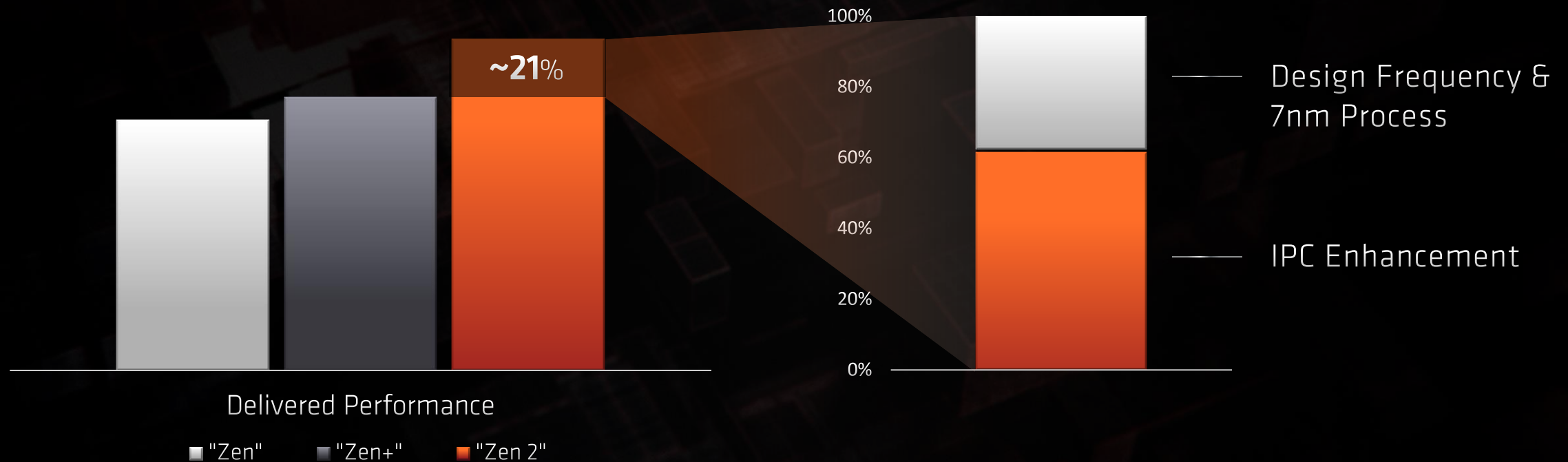
Breakthrough 2nd Gen
AMD Infinity Architecture
Interconnect

~15% IPC Uplift,
For Leadership
Performance

SINGLE THREAD HIGH-PERFORMANCE

CINEBENCH R20 1T PERFORMANCE

"ZEN 2" PERFORMANCE CONTRIBUTORS



Significant Architecture
Changes to Beat Industry Norm

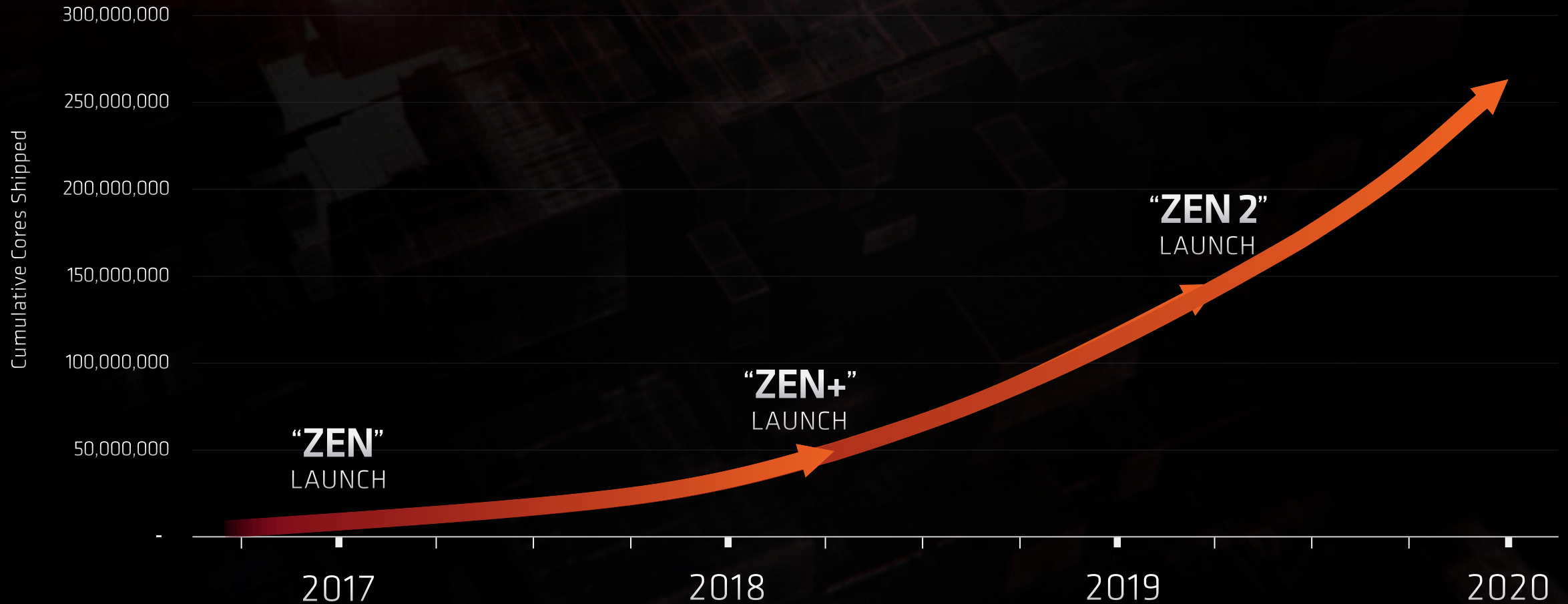
Improved Branch
Prediction

Higher Integer
Throughput

Doubled
Floating Point

Reduced Effective
Latency to Memory

260+ MILLION “ZEN” CORES SHIPPED TO DATE



AMD PRODUCT SECURITY LEADERSHIP



STRONG SECURITY TRACK RECORD

Dedicated Secure Processor

Designed to Mitigate Many CPU Side Channel Attacks

Industry-leading Memory Encryption



ARCHITECTING EVEN STRONGER SECURITY FOR THE FUTURE

Modern Security Support Across Windows® Applications

Cloud Tenant Protection Against Malicious Host

Member Confidential Computing Consortium

THE NEXT FIVE YEARS **RELENTLESS TECHNOLOGY INVESTMENT**

CPU Roadmap
Generational Focus

Leading Edge Process &
Packaging Technology

Next Generation
Interconnect

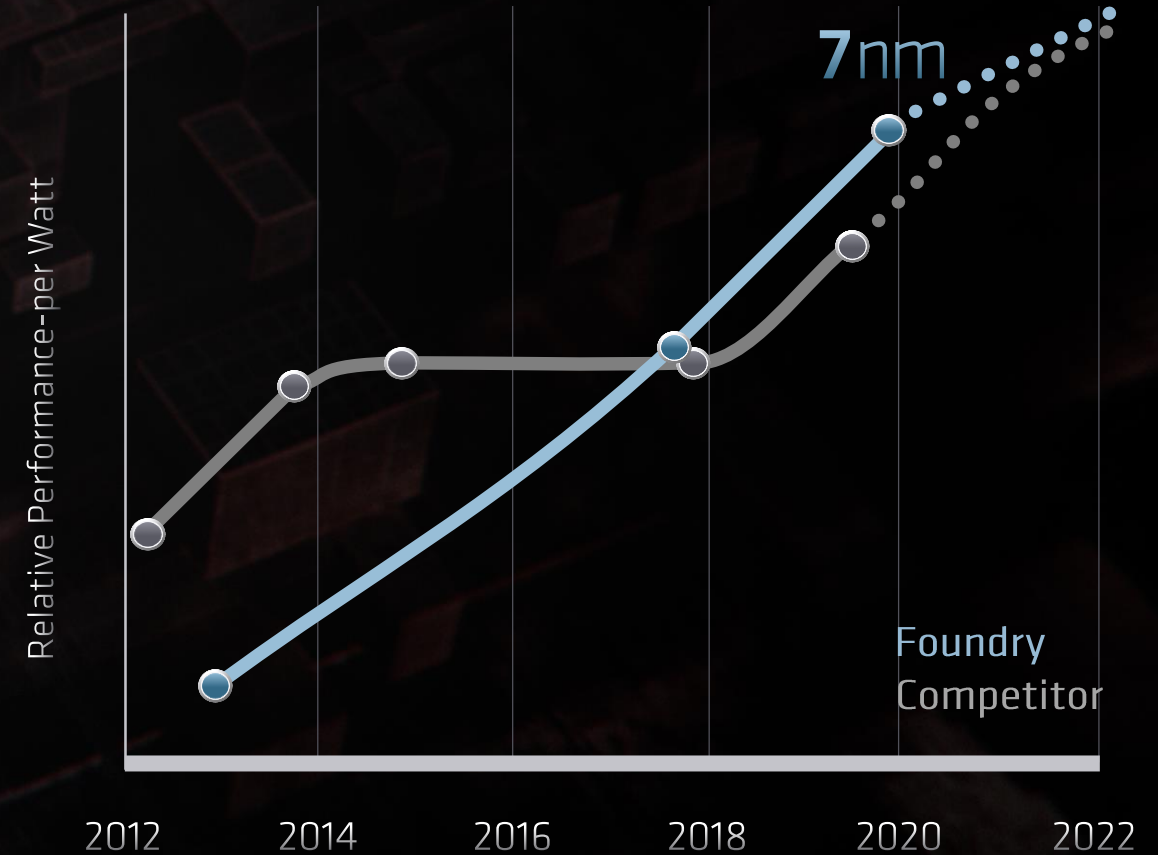
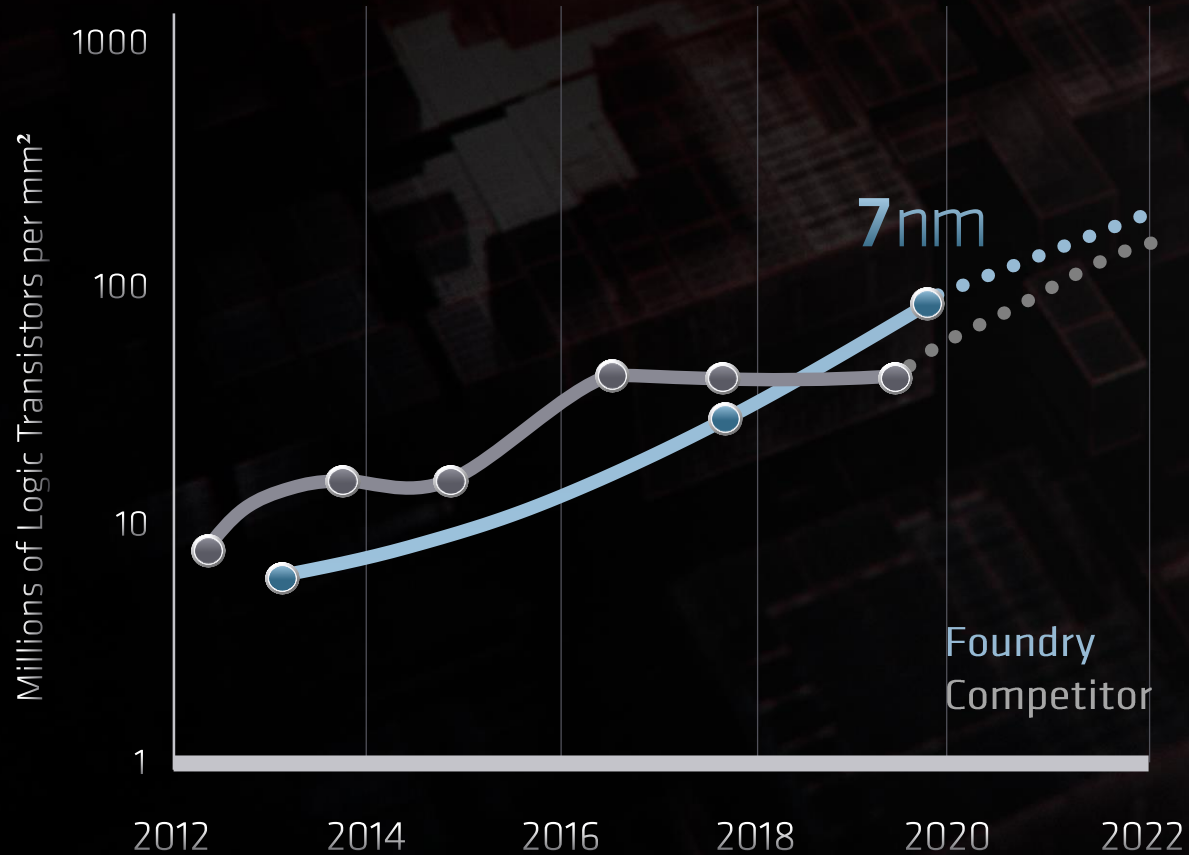
Accelerated
Computing

CPU ROADMAP

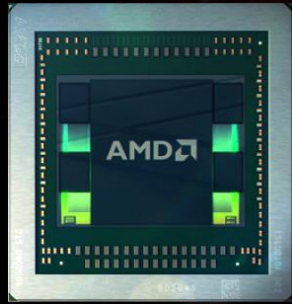
SUSTAINED HIGH-PERFORMANCE LEADERSHIP



LEADING-EDGE FOUNDRY PROCESS TECHNOLOGY

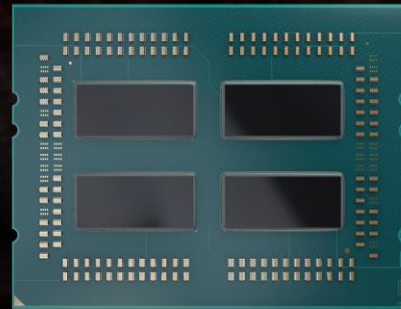


AMD LEADERSHIP PACKAGING



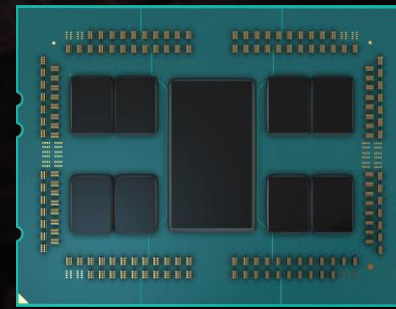
2.5D HBM

2015



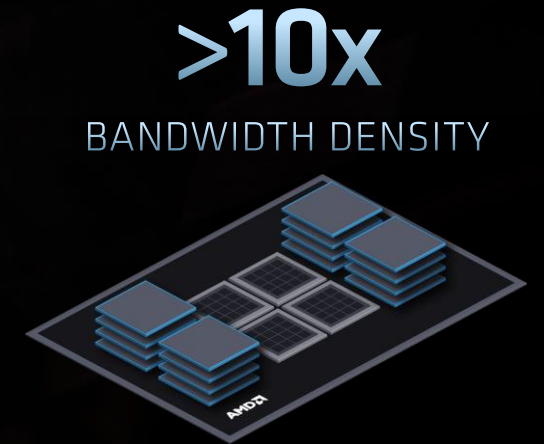
MULTICHIP MODULE

2017



CHIPLETS

2019



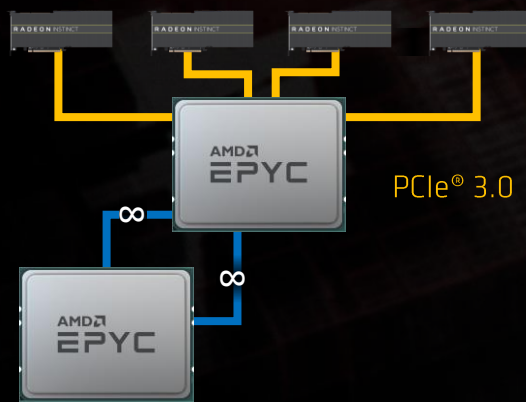
"X3D" PACKAGING
(Hybrid 2.5 & 3D)

Future

Led Industry in 2.5D & Chiplet Architecture

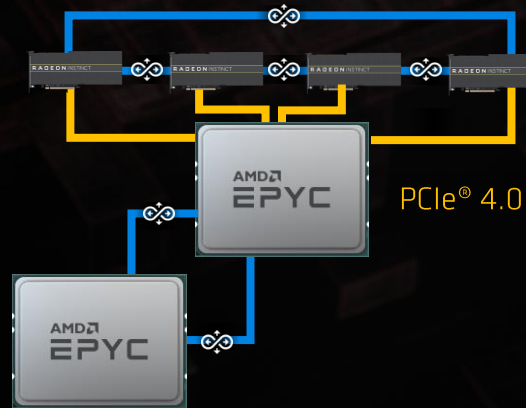
Aggressive Roadmap for Chiplet & 3D Integration

AMD INFINITY ARCHITECTURE ROADMAP



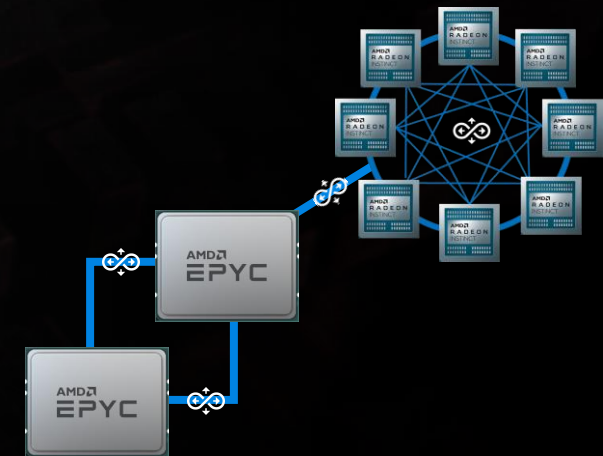
**CPU
CONNECTIVITY**

1st Gen
AMD Infinity Fabric™



**4/8-WAY GPU
CONNECTIVITY**

2nd Gen
AMD Infinity Architecture



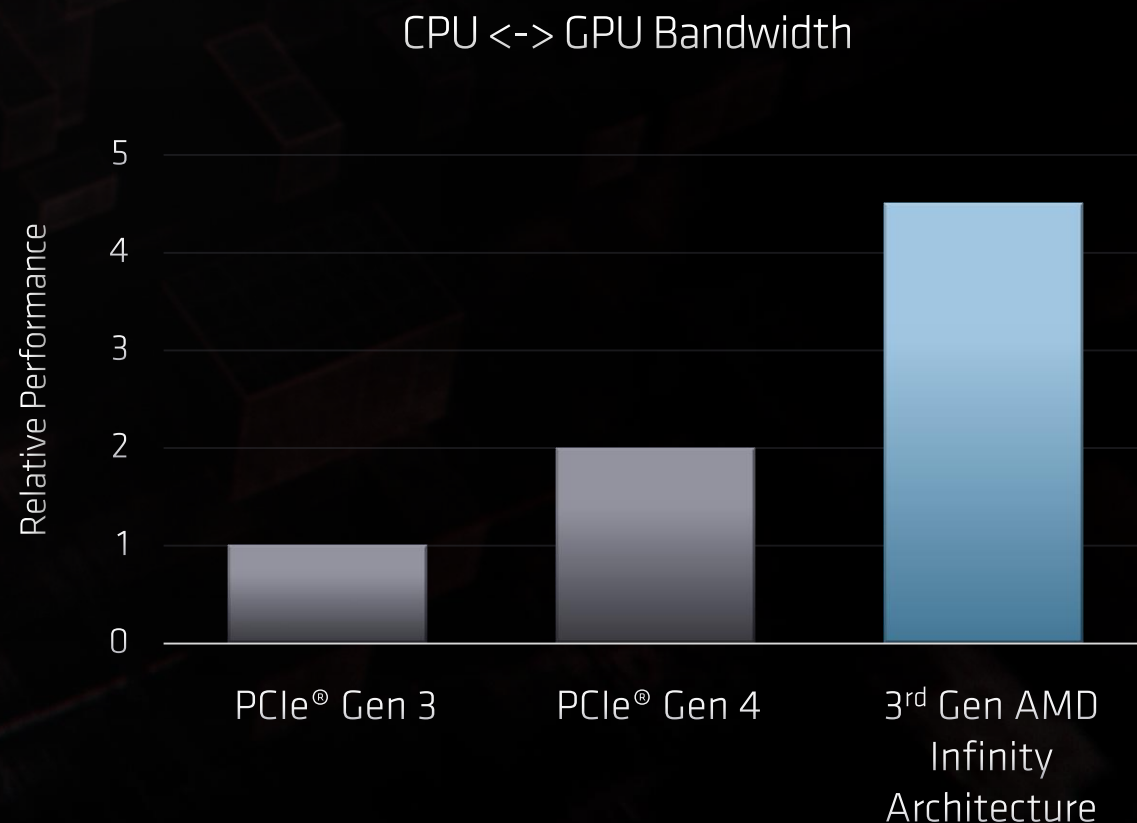
**UP TO 8-WAY GPU WITH
COHERENT CONNECTIVITY**

3rd Gen
AMD Infinity Architecture

2017 ————— 2022

AMD 3RD GEN INFINITY ARCHITECTURE ENABLES ACCELERATED COMPUTING

- Unprecedented bandwidth & reduced latency between CPU & GPU
- Unified data fabric between CPU & GPU
- Ease of programmability with added coherency: CPU ability to cache GPU memory



ACCELERATED COMPUTING

TACKLING THE WORLD'S MOST IMPORTANT COMPUTATIONAL CHALLENGES

Performance of Top Supercomputers



TECHNOLOGY FOR THE FUTURE

Roadmap for
Relentless Compute
Efficiency Gains

Aggressive Process
& Packaging
Deployment

Faster Time to Market
Through Innovative
Execution

Exascale High-Performance
Driving Next Wave
of Innovation

The background is a dark, textured surface with a grid-like pattern of raised and recessed squares, resembling a circuit board or a 3D-printed grid. The lighting is dramatic, with a bright, glowing square in the upper left corner casting a strong light across the grid. The AMD logo is centered in the middle of the image, rendered in a clean, white, sans-serif font. The letters 'A', 'M', and 'D' are bold and blocky, while the 'A' logo symbol is a stylized, geometric shape composed of two triangles meeting at a point.

AMD

END NOTES

EPYC-07

7nm technology used in Zen 2 provides 2x the density as 14 nm technology used in Zen and 7nm technology used in Zen 2 delivers the same performance as 14 nm technology used in Zen at half the power. Substantiation: Based on June 8, 2018 AMD internal testing of same-architecture product ported from 14 to 7 nm technology with similar implementation flow/methodology, using performance from SGEMM.

EPYC-09

AMD “Matisse” CPU-based system scored an estimated 15% higher SPECint®_base2006 than previous generation AMD “Summit Ridge” based systems. Estimate based on internal testing of internal “Matisse” vs. “Summit Ridge” platforms with single threaded SPEC CPU® 2006 Speed, compiled with Open64 4.2.5.1. SPEC, SPEC CPU and SPECint are registered trademarks of the Standard Performance Evaluation Corporation. For more information about SPEC, see www.spec.org.

ROM-11

EPYC™ 7002 series has 8 memory channels, supporting 3200 MHz DIMMs yielding 204.8 GB/s of bandwidth vs. the same class of Intel Scalable Gen 2 processors with only 6 memory channels and supporting 2933 MHz DIMMs yielding 140.8 GB/s of bandwidth. $204.8 / 140.8 = 1.454545 - 1.0 = .45$ or 45% more. AMD EPYC has 45% more bandwidth. Class based on industry-standard pin-based (LGA) X86 processors.

ROM-21

Based on processor I/O lanes multiplied by PCIe® bandwidth. PCIe 4 = 16 GB/s link bandwidth vs. PCIe 3 = 8 GB/s. ROM-21

ROM-114

Based on SPECrate®2017 peak integer scores. A 2P EPYC™ 7742 processor powered server has higher SPECrate®2017_int_peak score of 749 and a base score of 682 as of August 7, 2019, <http://spec.org/cpu2017/results/res2019q3/cpu2017-20190722-16242.html>. The next highest int_peak score with a 2P Intel Platinum 9282 of 676 and a base score of 643, <http://spec.org/cpu2017/results/res2019q3/cpu2017-20190624-15369.pdf>, on July 28, 2019. SPEC®, SPECrate® and SPEC CPU® are registered trademarks of the Standard Performance Evaluation Corporation. See www.spec.org for more information.

RZ3-45

Testing by AMD Performance Labs as of 06/03/2019 utilizing 3rd Gen AMD Ryzen™ Processors: 3900X, 3800X, 3700X, 3600X, 3600 and Ryzen™ 7 2700X in Cinebench R20 1T. Results may vary.

RZ3-25

Testing by AMD Performance Labs as of 06/03/2019 utilizing an AMD Ryzen™ 7 1800X and 2700X in Cinebench R20 1T. Results may vary.

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