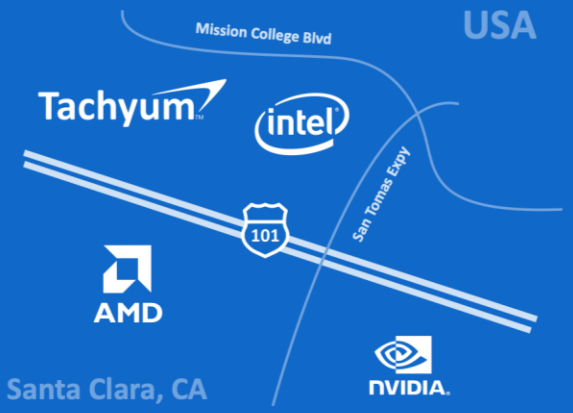
Tachyum™



Tachyum™ ● HENDERSON, NEVADA

US National Security

“one aspect of the return of great power competition is the race to develop AI” … “who harnesses once-in-a-generation technologies often have a decisive advantage”

- Secretary of Defense at JAIC 2020

How USA Lost Technological Leadership With China

- Chip data processing speed gains dropped from 50x, to 10x, and are now 2x per decade

Tachyum solved the problem which caused the performance growth slowdown

- Restores more than 10x performance gain per decade, creating a sustainable strategic advantage
- Tachyum will turn many hyperscale datacenters into CAPEX-free human brain-sized AI datacenters

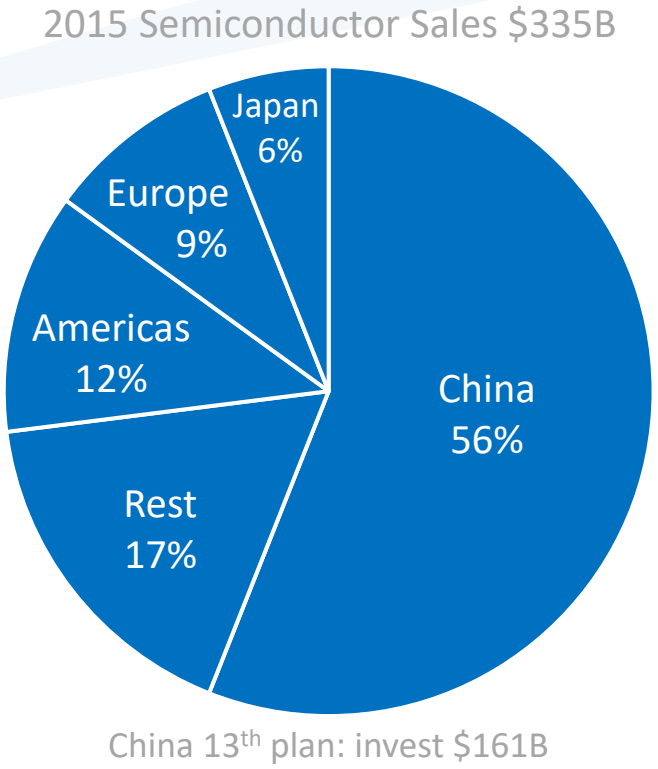
Superhuman brain-scale AI in 2022, which is 10-15 years earlier than expected

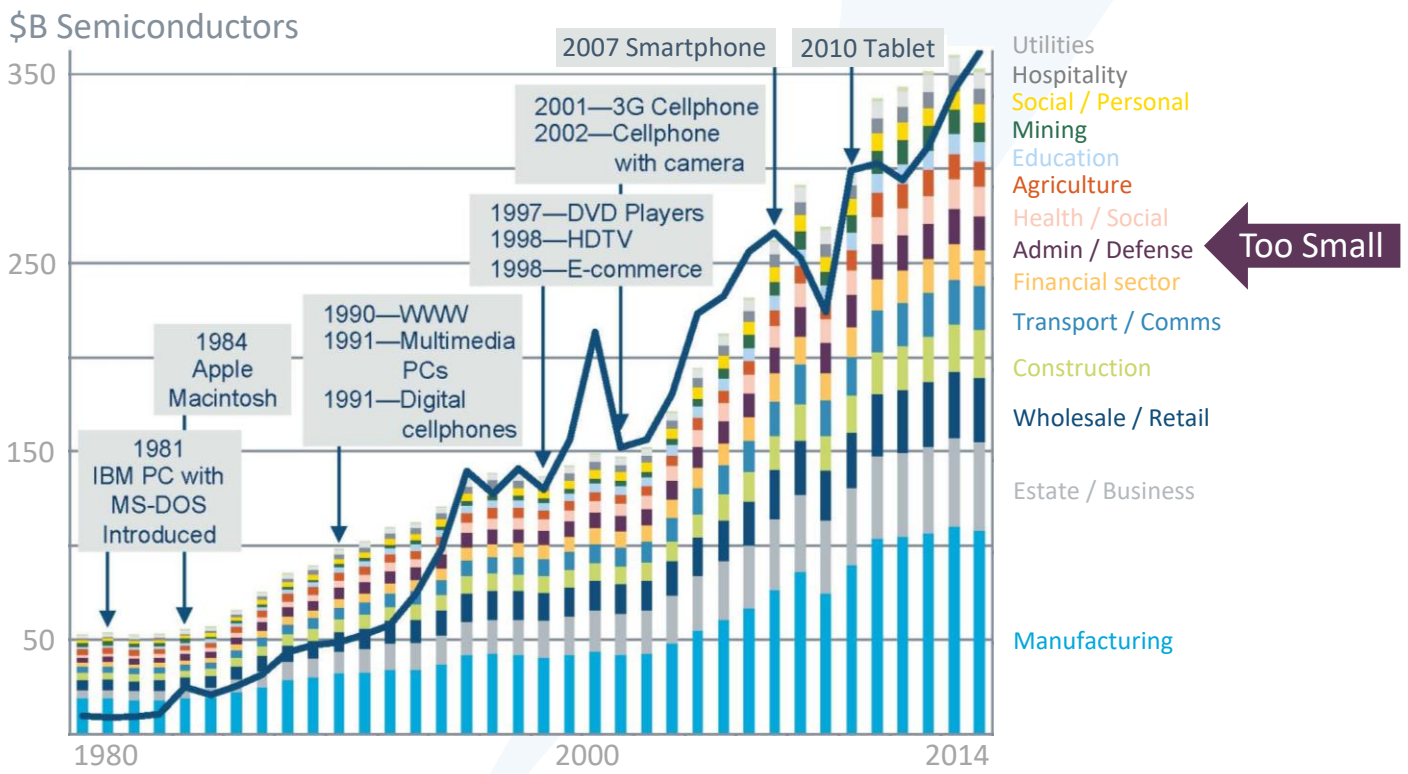
- Enable superhuman brain-scale systems: 1 AI Zettaflop by 2023 by changing the economy
- Once a winner, the winner is forever with technological superiority against competitors/adversaries

US Defense Too Small To Drive Silicon Innovation

Need to economically move the entire industry, not just defense, to improve lead

- Only way is to fix the engine driving revenue and innovation, and not reducing sales





Tachyum™

Building a $20B Semiconductor Company

Market	Product	Value
• Cloud + AI/HPC • Telco and Edge • $50B market • 20% growth	• Server processor faster than Xeon • AI/HPC chip faster than NVIDIA's	• 3x lower cost • 10x less power • Universality • AI/HPC CAPEX free

3% of market share should give Tachyum $20B cap

AMD $90B cap at $6.7B revenue, Intel + NVIDIA + AMD cap is over $500B

Tachyum Confidential and Proprietary prepared for DIA CIO Summit.

Tachyum is Critical for Datacenter Growth

3% of planet's electricity today

- 60% more than UK

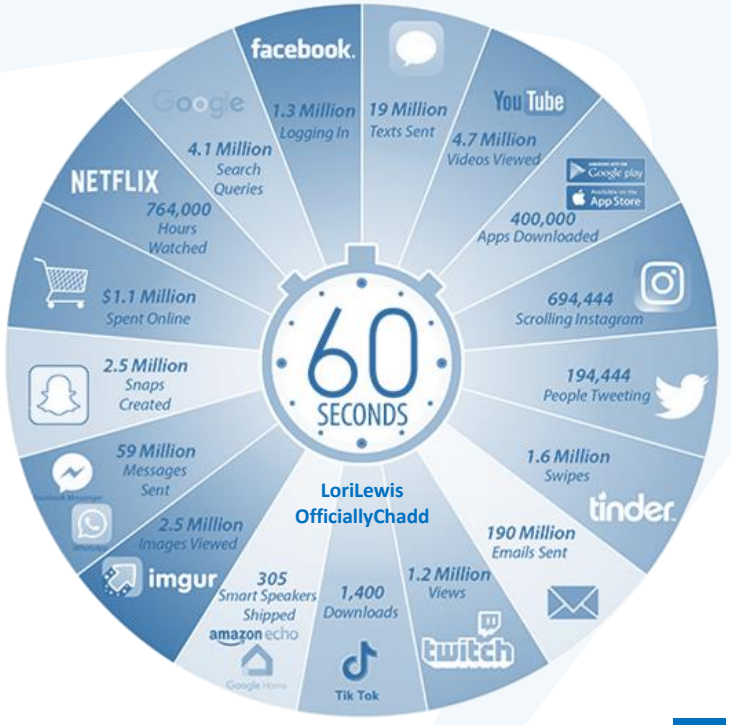
50% of the planet's energy by 2040

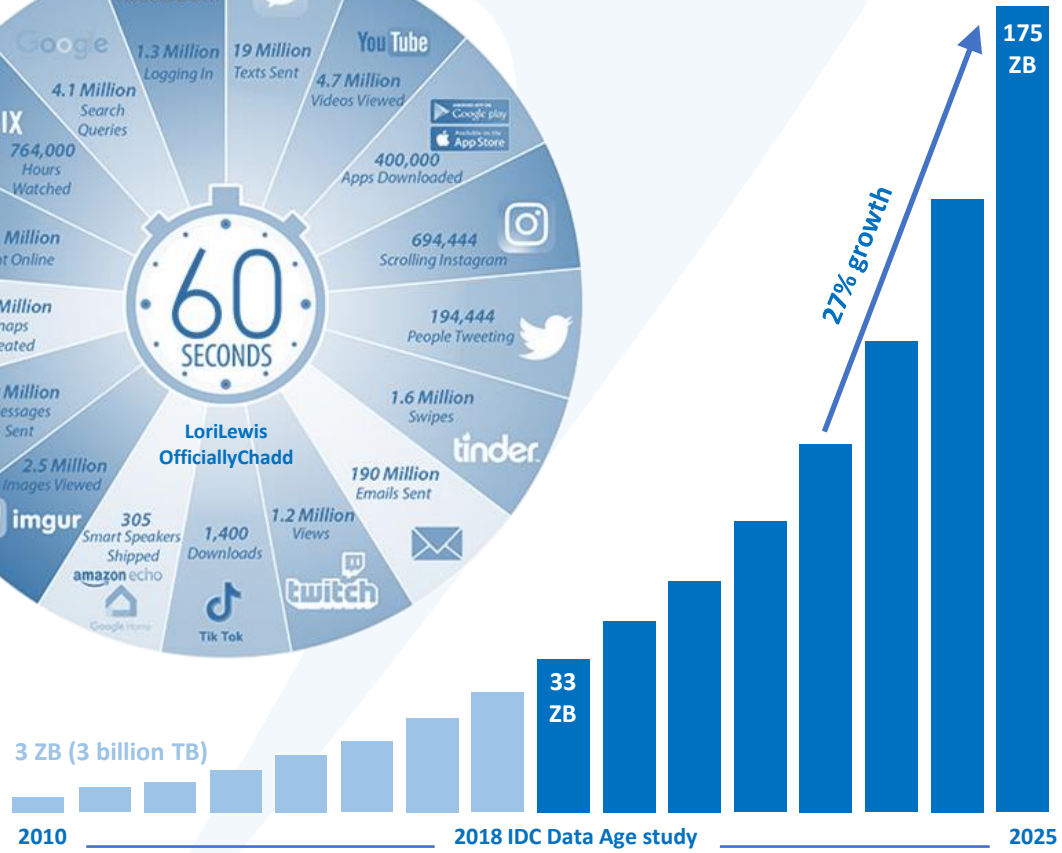
- At 27% growth, it will be 33% by 2030

Largest CO_2 reduction impact

- Prodigy powered datacenters would reduce CO2 emissions by 660 million tons/year
- More than could be saved by eliminating the entire airline industry

10x lower power is needed to extend current datacenter growth rate





Tachyum™

Faster than Xeon & More Efficient than ARM

Local computations not limited by wire delay

- Architecture minimizes global computations

Faster than Xeon & more efficient than ARM

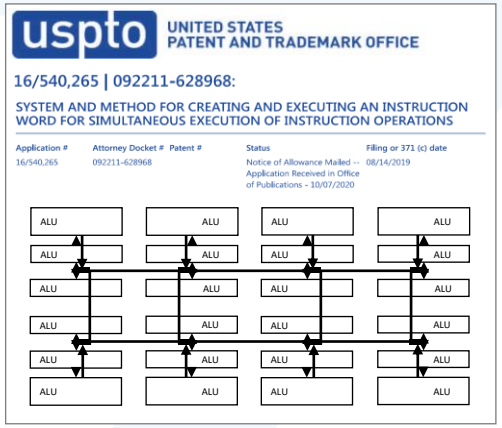
- Short wires, with compiler's help, reduce delays

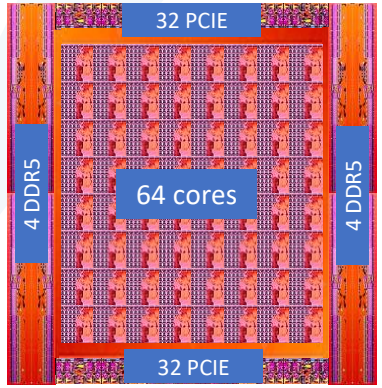
Application binaries run without changes

- Dynamic binary translation from X86 and ARM

64 cores, each faster than Xeon core

- 4GHz 7nm, 8 DDR5, 64 PCIE 5.0, faster than A100





Tachyum

World's 1st Universal Processor for Servers / AI / HPC

Server / Supercomputer / AI Chip

- For hyperscale datacenters

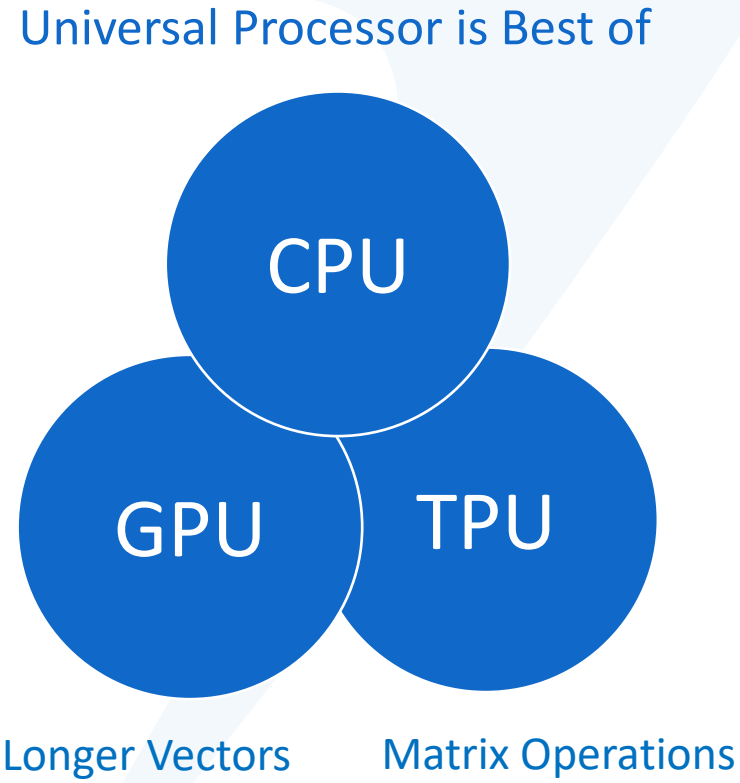
Humanity: 1st human brain sized AI

- Not only Focus on Deep Learning AI
- Also Explainable, Bio, Spiking and General AI

Prodigy is faster than Xeon/GPU/TPU

- Faster, 10x less power, 1/3 cost of Xeon
- Faster than NVIDIA A100 in HPC and AI

Solid roadmap expanding leadership



Tachyum Confidential and Proprietary prepared for DIA CIO Summit.

Bringing Superhuman Brain-Scale AI to Mainstream

$300B worth of servers: 50% time wasted

- Less than 5% of servers have AI GPUs

Universal Processor for Servers / HPC / AI

- 10x more AI / HPC by using idle servers

Human Brain-Scale AI Datacenters in 2023

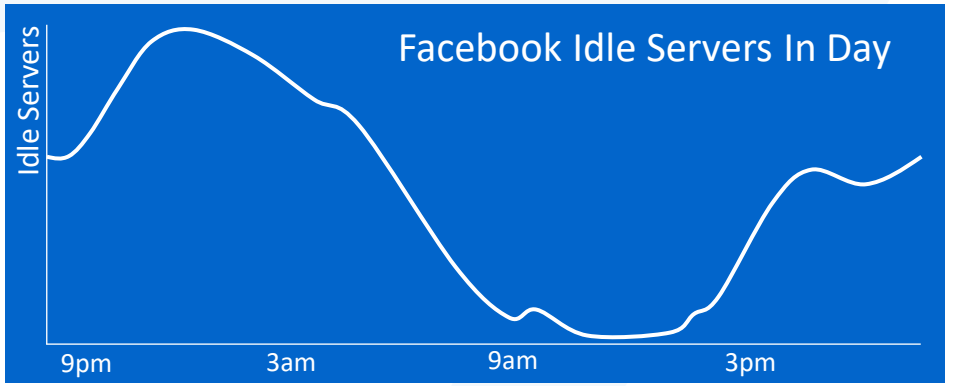
- 100+ AI Exaflops with no capital expenditure

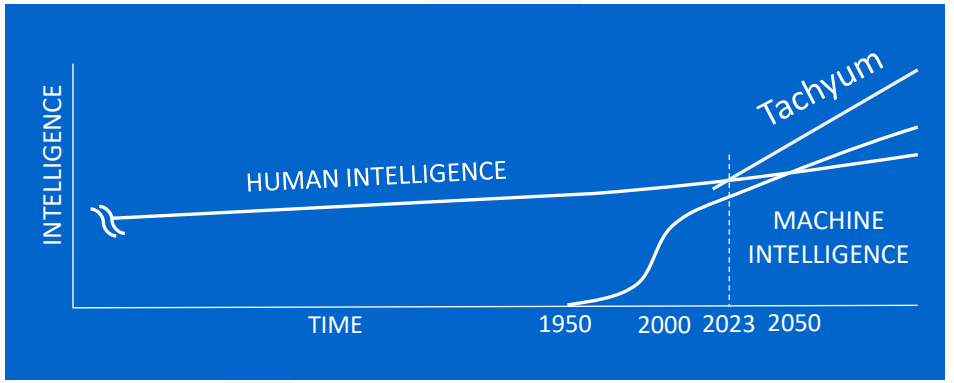
Superpowers Race to Superhuman AI

- Gives fundamental edge against competitors

Massive growth in AI enabled by Prodigy

- Low Cost / Big AI will be available to Everyone through the cloud

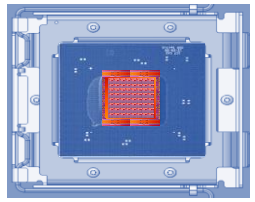




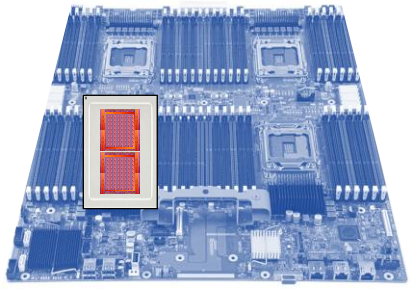
Tachyum™

$33B Cloud / HPC / AI / Edge Chip Markets

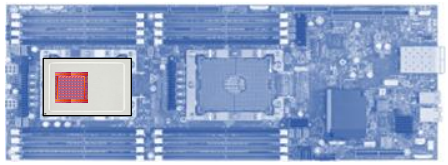
Chip SKUs
$300 - $9000



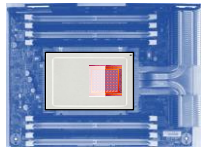
HPC/AI 4x128 cores



Mainstream 2x64 cores

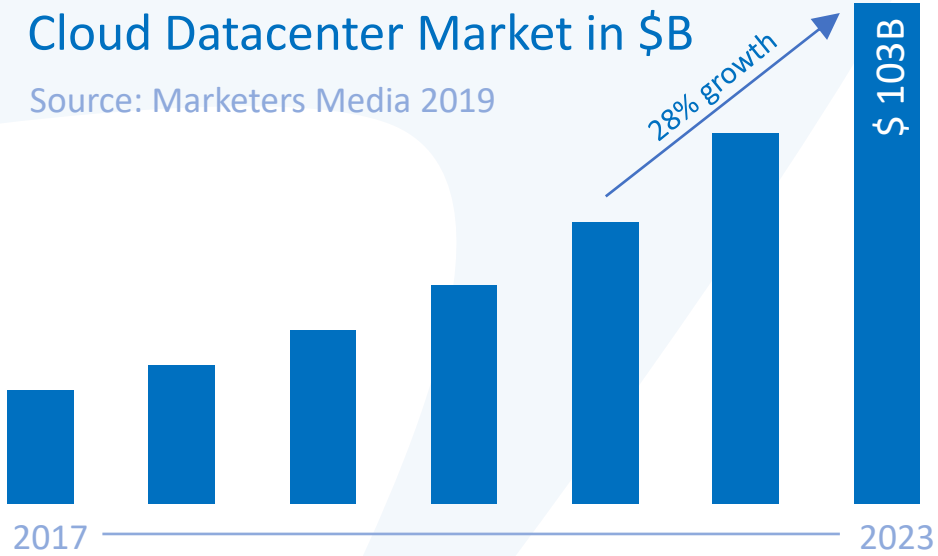


Web/Edge 32/16 cores

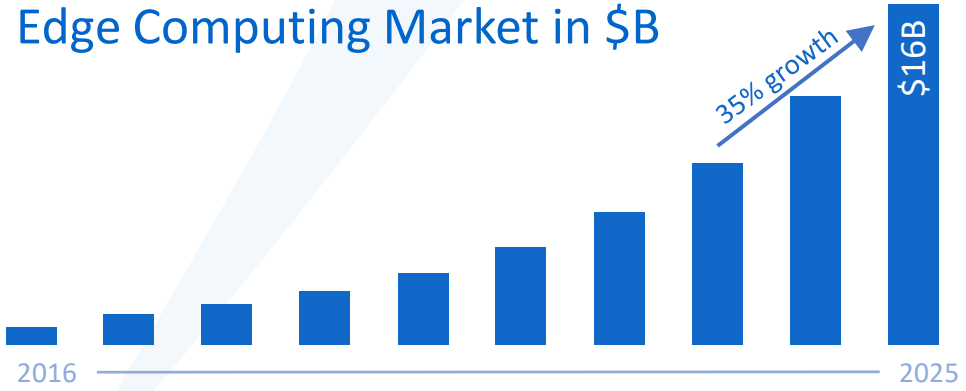


Cloud Datacenter Market in $B

Source: Marketers Media 2019



Edge Computing Market in $B



Tachyum™

$67B AI Silicon Market

16M server processors shipping annually

- 166K NVIDIA boards is 1% of processor volume

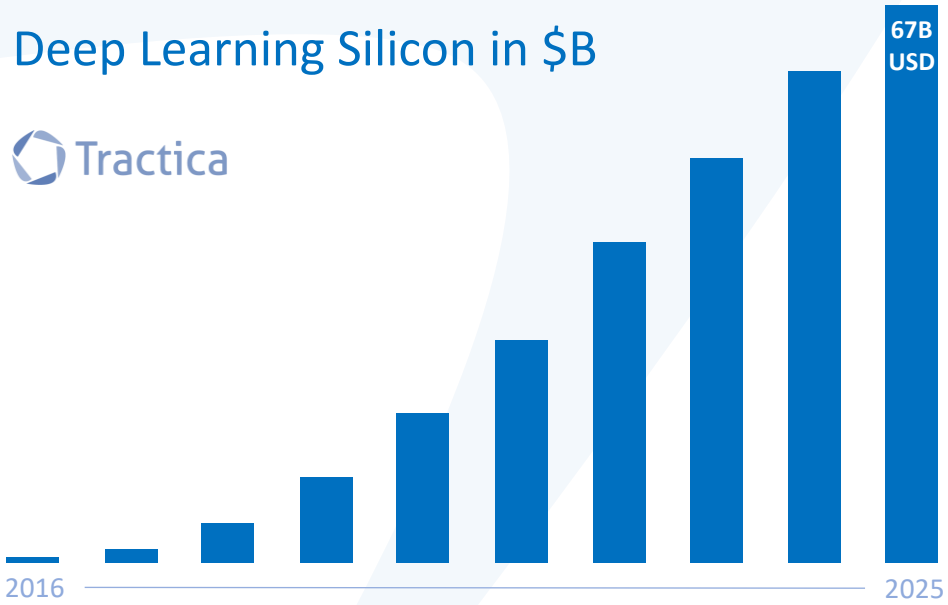
Only 8K AI accelerator boards shipped

- 5% of NVIDIA boards and 0.05% of servers

Tachyum market: 16M chips & AI for free

- Tachyum volume is economically sustainable

Stand-alone accelerators not sustainable



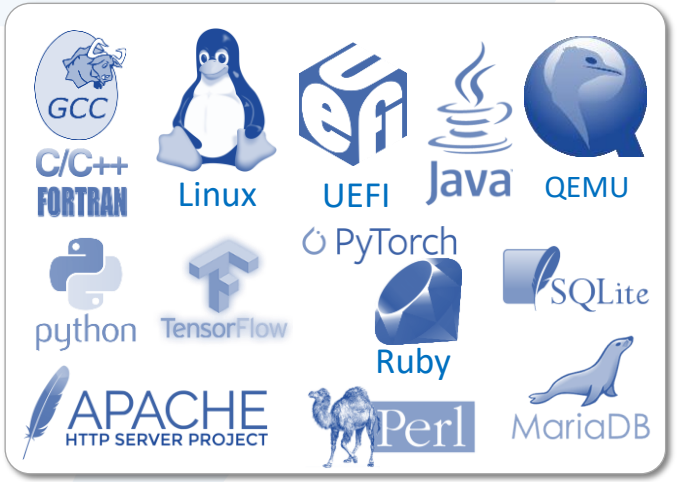
	2017	2018	2019	Share
NVIDIA boards	100,857	182,424	166,056	95 %
Accelerator boards	14,780	7,738	8,134	5 %

Source: Hyperion, 2020

Core Software Available, the Rest on Target for Launch

Compilers, Linux, Apps & X86 emulation available today

- C/C++/Fortran GCC, Glibc, Musl, GDB, Linux, drivers, UEFI, QEMU
- Servers: Apache, SQLite, MariaDB, MongoDB
- Scripting languages: PHP, Python, Perl, Ruby, Tcl
- Non-JIT version of Java Virtual Machine
- Git, Subversion, Sed, Gawk, Grep
- Scientific libraries: Eigen, vectorized & tensorized BLAS including GEMM and LAPACK, FTT library, ODE/PDE solvers
- AI software: TensorFlow, PyTorch
- All above already demonstrated



X86 & ARM binaries already run via binary emulation

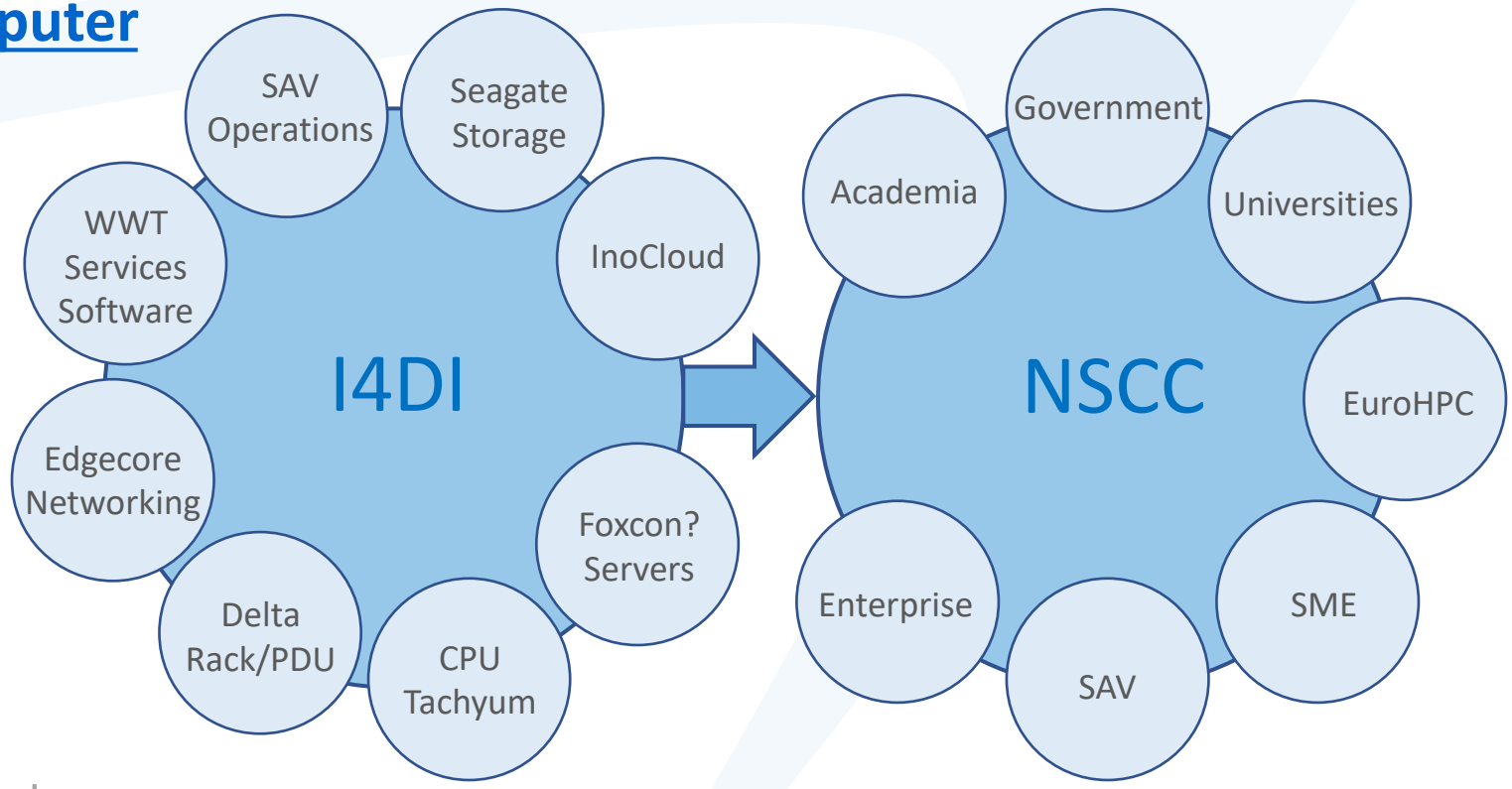
- X86 binaries already run at over 3GHz Xeon speed
- Demonstrated mixing X86 binaries with native applications

Remaining low risk tasks before product launch in 2021

- Complete LLVM, FreeBSD, KVM, XEN, and port device drivers
- Expand list of optimized native out-of-box applications

Breaking Into the Market

- **World's fastest AI supercomputer**
  - 3x better performance/$
  - Universal Processor Value
- As Big Visible Customer
  - To show value proposition
  - Show that product is ready
- Create partner ecosystem
  - I4DI NGO of technology leaders
  - NSCC operates supercomputer
  - Hyperscale: no middleman model
  - Show benefit of dual use technology



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Tachyum™

Building a $20B Company

10x Less Power, 1/3 Cost, 1st Human Brain Scale AI

techradar pro

This US startup is about to release a universal CPU that could threaten Intel, AMD, and Nvidia

electronic specifier

Tachyum unveils Prodigy universal processor prototype

ZDNet

Close to the metal: serial entrepreneur Rado Danilak describes ‘the most crazy project

The Washington Times

Revolutionary microchip hailed as 'generational' breakthrough that will upend defense tech

techradar pro

This Intel and Nvidia rival can run everything from hyperscale data centers to your web hosting

HPC wire

Tachyum Prodigy Software Emulation Systems Now Available for Pre-Order

ENTERPRISEAI
ADVANCED COMPUTING IN THE AGE OF AI

Tachyum Emulation Platform Begins Live Web Hosting

THENEXTPLATFORM

Tachyum starts from scratch to etch a Universal Processor

Forbes

Data Center Converged Hardware Is Just A Stop On The Road To A Universal Processor

Thank You!

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