

INTEL UPDATE

MARCH 2018

TRISH DAMKROGER, VP & GM TECHNICAL COMPUTING
INTEL CORPORATION

OUR VISION: THE GREATEST SCIENTIFIC AND CREATIVE

BREAKTHROUGHS ARE MADE POSSIBLE BY INTEL

AI

ANALYTICS

MEDICAL IMAGING

PRIVATE CLOUD

PRECISION MEDICINE

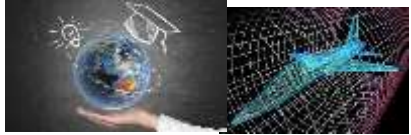
VISUALIZATION

SIMULATION

GENOMICS

THE HPC OPPORTUNITY

HPC MARKET



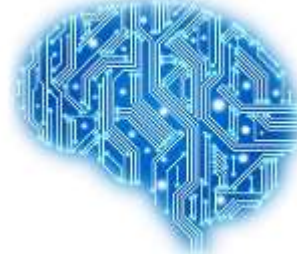
Est. HPC revenue
~\$30B in 2021 at
~7% CAGR¹

DATA ANALYTICS



Server revenue
CAGR ~17%; >\$4
billion in 2021²

ARTIFICIAL INTELLIGENCE



DL in HPC server
revenue CAGR ~81%,
overall AI-HPC
market ~30% CAGR
by 2021³

CLOUD



>65% of HPC
workloads are in
private-hybrid
clouds⁴

HPC WORKLOADS EXPANDING TO BECOME PERVASIVE ACROSS INDUSTRIES

¹ Source: Worldwide HPC Application Workloads Market Forecast Update, 2016–2021, July 2017

² Worldwide HPC-based Artificial Intelligence (AI) Market Forecast Update, 2016–2021, July 2017

³ Source: Attributes of the Top National Buyers of HPC Resources for Deep Learning and Machine Learning, 2018

⁴ Source: Hyperion, Types of Clouds Used for HPC Workloads, 2017

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HPC GROWTH VECTORS

NEW USE CASES

SUPERCOMPUTERS

AI-HPDA-MOD-SIM

CLOUD

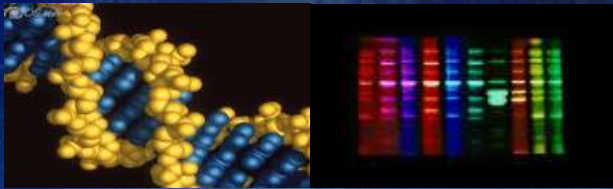
ON-PREM/HYBRID

EXA



THE COMING DELUGE OF DATA

DATA EXPLOSION CHALLENGE



THE LIFE SCIENCES DATA CHALLENGE¹

CRYO-ELECTRON MICROSCOPY: 25TB/DEVICE/DAY

IN 2014, LEAD SEQUENCER: <1TB/DEVICE/DAY, "\$1000 GENOME"

IN 2017, LEAD SEQUENCER: 3.6TB/DEVICE/DAY, "\$100 GENOME"



THE WORLDS LARGEST RADIO TELESCOPE²

10 BILLION DATA STREAMS

INCOMING DATA: 10 PETABYTES

OUTPUT 3D IMAGE: 1 PETABYTE PER IMAGE

STORAGE: 80 PETABYTES

THE SCIENTIFIC OPPORTUNITY OF BIG DATA: DRIVING INSIGHTS

- Source 1: Intel
- Source 2: <https://www.hpcwire.com/2017/11/17/sc17-keynote-hpc-powers-ska-efforts-peer-deep-cosmos/>

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PREDICTIVE ANALYTICS BUSINESS IMPACT

80%

Accuracy in predicting likelihood of an RRT (Rapid Response Team) event within 1 hour¹



70%

Accuracy in prediction of prolonged ventilation 48 hours in advance of respiratory failure²



85%

Accuracy in identifying Sepsis cases 30 hours before onset of septic shock³



1. Using Machine Learning and EMR data to Predict Patient Decline: <https://www.intel.com/content/dam/www/public/us/en/documents/case-studies/using-machine-learning-and-emr-data-to-predict-patient-decline-study.pdf>

2. Montefiore Data Analytics Platform Advances Patient Care; <https://www.intel.com.au/content/www/au/en/healthcare-it/solutions/documents/montefiore-advance-patient-care-solution-brief.html>

3. 'Penn Signals Big Data Analytics Helps Penn Medicine Improve Patient Care; Healthcare IT news article <http://www.healthcareitnews.com/sponsored-content/penn-signals-big-data-analytics-helps-penn-medicine-improve-patient-care-0>

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INTEL'S HPC PORTFOLIO

SERVER

CPUs • Chipsets • Ethernet, InfiniBand, Omni Path • Boards/Systems • SSDs • FPGA

STORAGE

CPUs • Flash • Caching & RAID SW

NETWORK

CPUs • Accelerators • Ethernet & Infiniband Switch Silicon

SOFTWARE

Lustre File System • AI Frameworks • OpenHPC

BROAD INTEL EU COLLABORATIONS



INVESTMENTS

ENGAGEMENTS & CUSTOMERS

>20K EMPLOYEES

>\$1.8B IN ICAP INVESTMENTS

>\$25B MANUFACTURING FABs

Source: [Intel](https://www.intel.com)

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>25 EMEA INTEL PARALLEL COMPUTING CENTERS



Source: <https://software.intel.com/en-us/ipcc/centers>

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INTEL EUROPEAN EXASCALE LABS

ADDRESSING THE EXA CHALLENGES

SCALABILITY

RESILIENCE

ENERGY



Source: <http://www.exascale-labs.eu/>

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**INTEL IS DEEPLY INVESTED IN EMEA & WE WILL CONTINUE TO
PARTNER WITH YOU TO STRENGTHEN AND DRIVE OUR
COLLABORATIONS**

THANK YOU!

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