
Dell EMC Update
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Solutions and Alliances
DELL EMC


HPC is evolving…

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Domain Experience & Expertise

Strategic Partnerships

Technology Innovations

HPC Innovation Lab

Dedicated HPC Sales & Soln. Architects

Dell EMC HPC Systems

Transforming the Future at the convergence of HPC, Big Data and the **Cloud**

Dell Workstations

Dell EMC Servers

Dell EMC Storage

Dell EMC Networking

Management

Services

VMware

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Dell Technologies portfolio for HPC

Dell Workstations

Precision Workstations

Dell EMC Servers

PowerEdge Servers
C6320
C6320p
C4130

Dell EMC Storage

Isilon
Scale I/O
ECS

Lustre
NFS

Dell EMC Networking

S-Series
25/40/50/100GbE

H-Series
(Omni-Path)

Mellanox EDR
InfiniBand

Management

Bright Cluster Manager

Cycle Computing

OpenHPC

Services

Deployment

Support

Financial Services

Remote Management with X-ISS

HPCaaS with R-systems

VMware

vRealize Automation (vRA)

Integrated OpenStack

Integrated Containers

vSphere

Virtual SAN

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HPC Innovation Lab

- Design, develop and integrate HPC systems
- Act as the focal point for joint R&D activities
- Conduct application performance studies and develop best practices
- Prototype and evaluate advanced technologies

Zenith

Top500 #372 system based on Intel SSF

Rattler

Collaboration with **Mellanox** and **NVIDIA**

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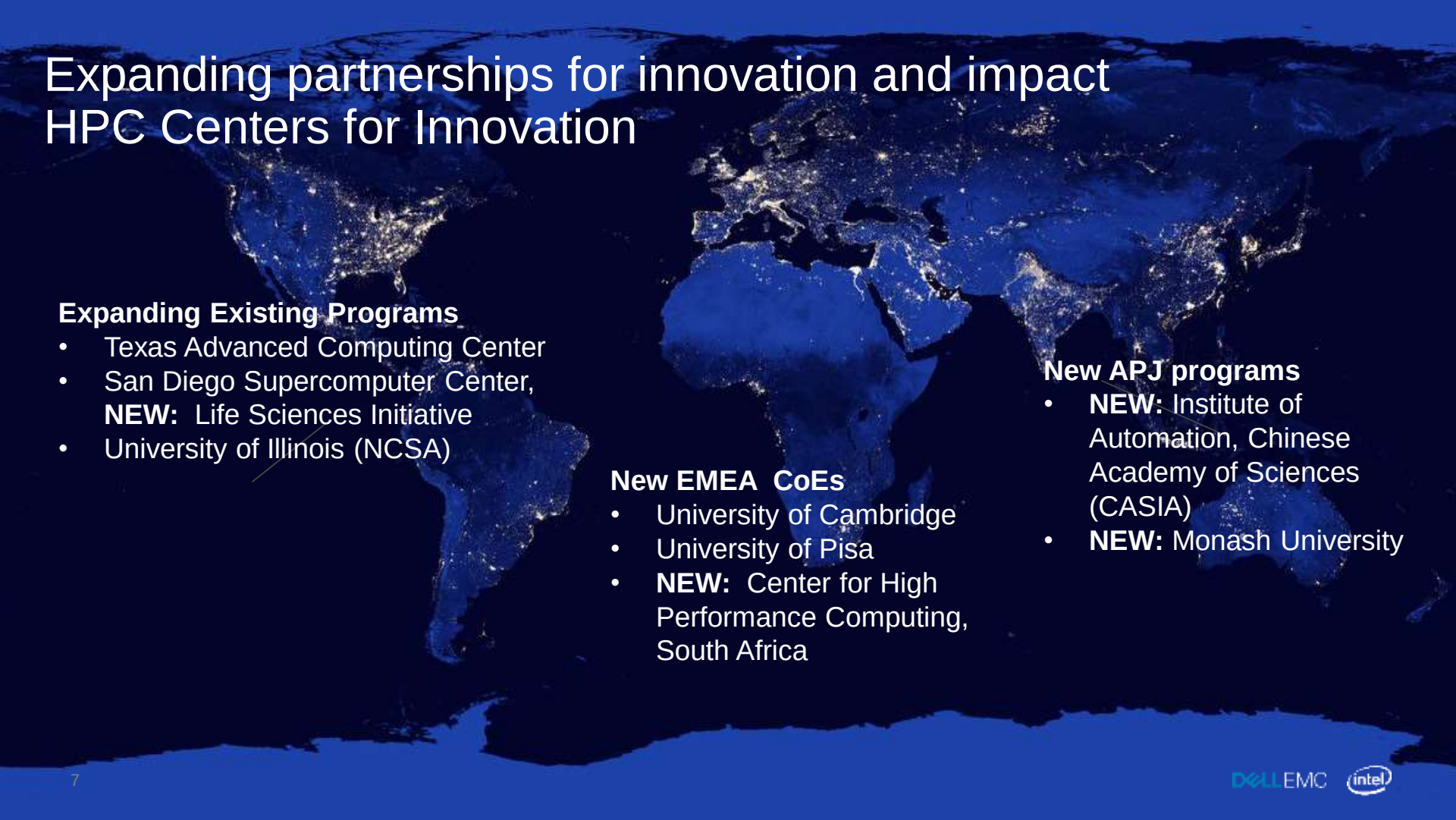
Expanding partnerships for innovation and impact
HPC Centers for Innovation



Expanding Existing Programs

- Texas Advanced Computing Center
- San Diego Supercomputer Center, **NEW:** Life Sciences Initiative
- University of Illinois (NCSA)

New EMEA CoEs

- University of Cambridge
- University of Pisa
- **NEW:** Center for High Performance Computing, South Africa

New APJ programs

- **NEW:** Institute of Automation, Chinese Academy of Sciences (CASIA)
- **NEW:** Monash University

DELL EMC intel

LINCOLN LABORATORY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

"The Dell HPC team was very knowledgeable and responsive and able to deliver, install, and benchmark our Petaflop-scale system in less than a month.

This was a great example of a well-coordinated and dedicated organization that was able to allocate the appropriate resources to exceed customer expectations."

— Jeremy Kepner, MIT Lincoln Laboratory Fellow and head of the Lincoln Laboratory Supercomputing Center

Mission

- To develop advanced technology for the Nation and support the broader MIT mission of advancing knowledge and educating students in science, technology, engineering and mathematics

New TX-Green System

- 648 node HPC system using Dell EMC early access systems with Intel Xeon Phi processors (KNL), with Dell EMC H-series switches based on Intel Omni-Path technology

Impact

- 1.7 Petaflops (peak) to enable research in fields such as space observations, robotic vehicles, communications, **cyber security**, machine learning, sensor processing, electronic devices, bioinformatics, and air traffic control

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DANA-FARBER CANCER INSTITUTE

PEKING UNIVERSITY

HARVARD MEDICAL SCHOOL

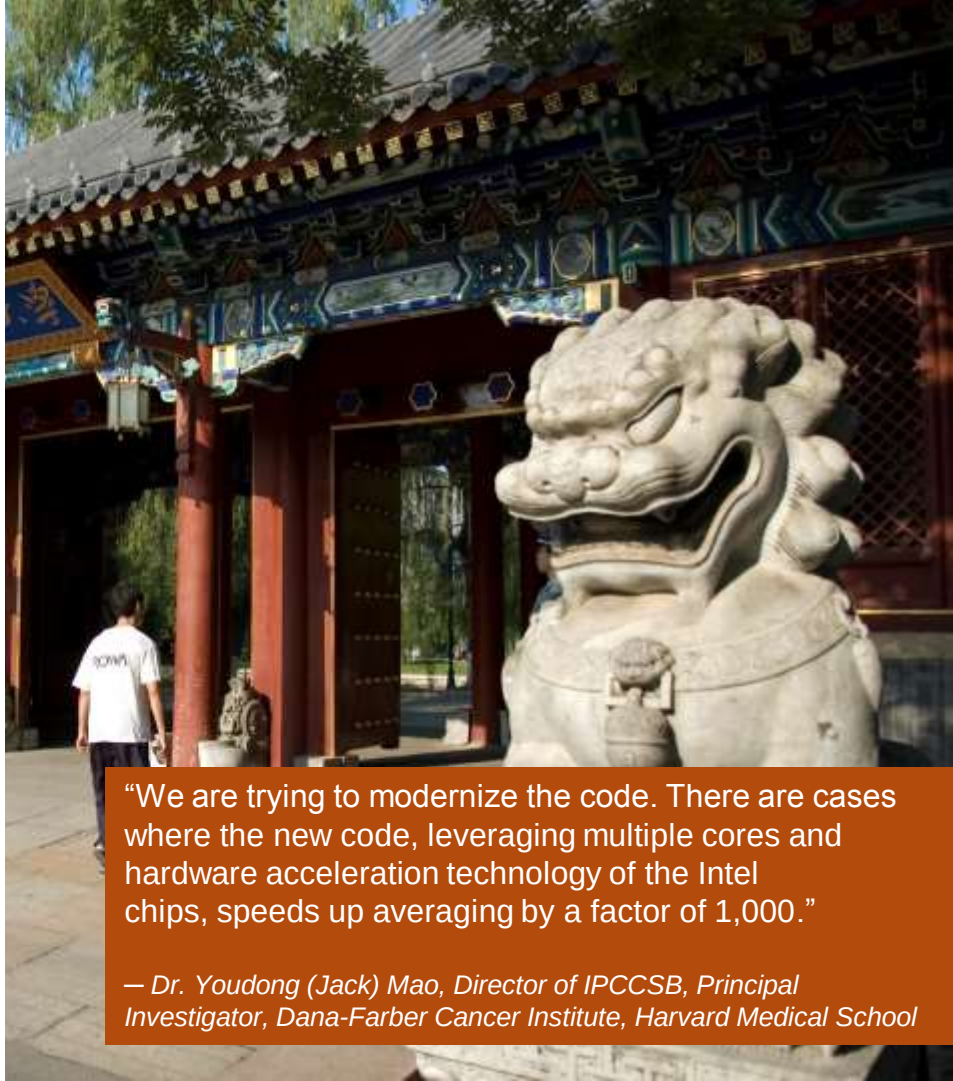
Need: State-of-the-art in Cryo-Electron Microscopy is rapidly replacing the traditional X-ray crystallography method for elucidating the 3D structures of single biomolecules

- Researchers must use sophisticated averaging and machine learning techniques to classify the image and analyze the 3D structure within massive amount of molecular images

Solution: Two HPC clusters to further Cryo-EM cooperative research with Harvard University

- Each with 144 Dell EMC PowerEdge Servers and approximately 2 petabytes of storage with Intel EE Lustre

Goal: Map the three-dimensional structure of biological macromolecules to design inhibitors and develop new drugs to treat or cure patients of cancer and other diseases



"We are trying to modernize the code. There are cases where the new code, leveraging multiple cores and hardware acceleration technology of the Intel chips, speeds up averaging by a factor of 1,000."

— Dr. Youdong (Jack) Mao, Director of IPCCSB, Principal Investigator, Dana-Farber Cancer Institute, Harvard Medical School

New TOP500 sites (November 2016 list)

LINCOLN LABORATORY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

#106 TX-Green

TACC

#144 Stampede-KNL

CHPC
CENTRE FOR HIGH PERFORMANCE COMPUTING

#161 Lengau

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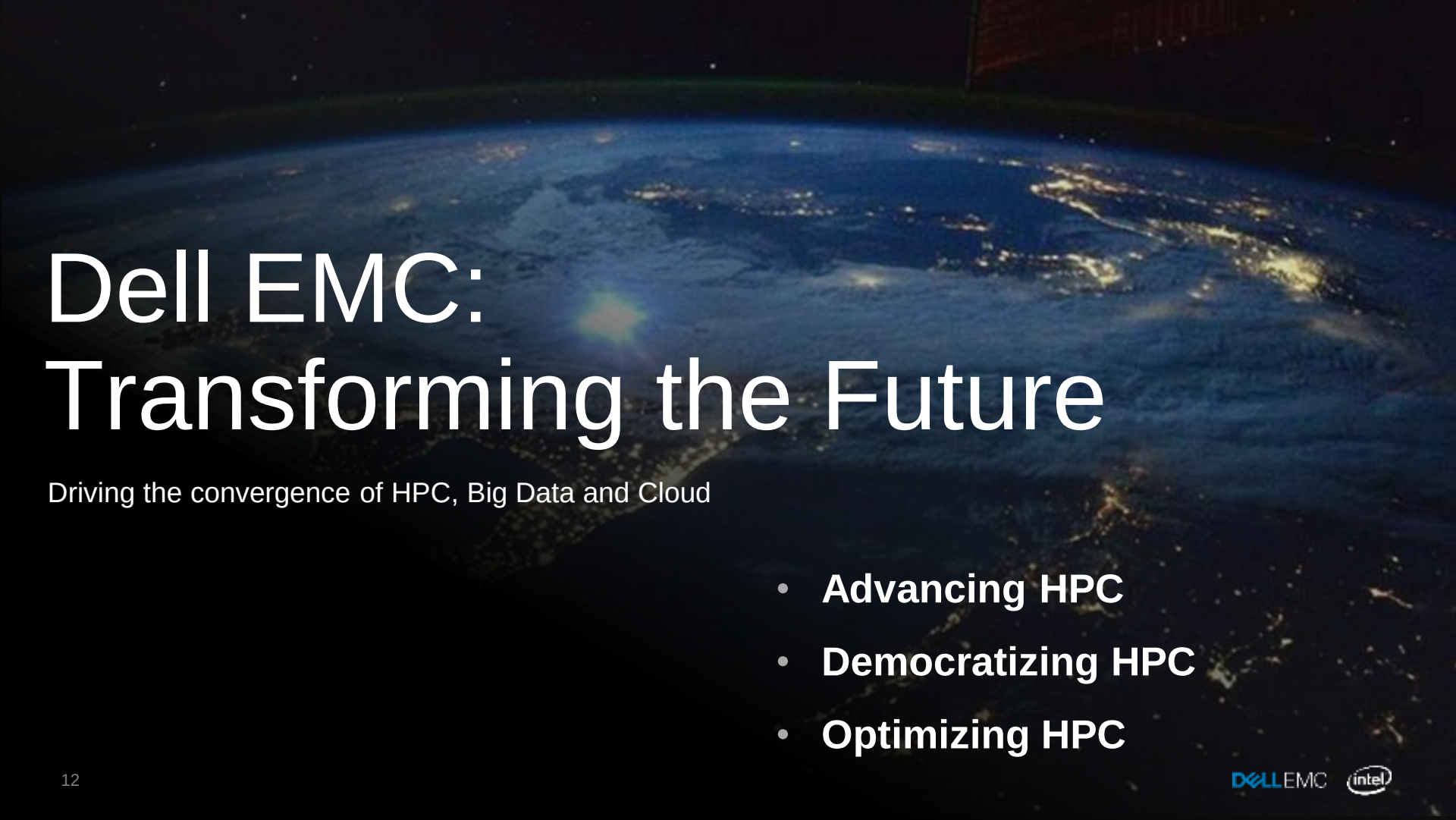

Dell EMC: Transforming the Future

Driving the convergence of HPC, Big Data and Cloud

- **Advancing HPC**
- **Democratizing HPC**
- **Optimizing HPC**

DELL EMC intel

Ask about the Dell EMC HPC Community
www.dellhpc.org