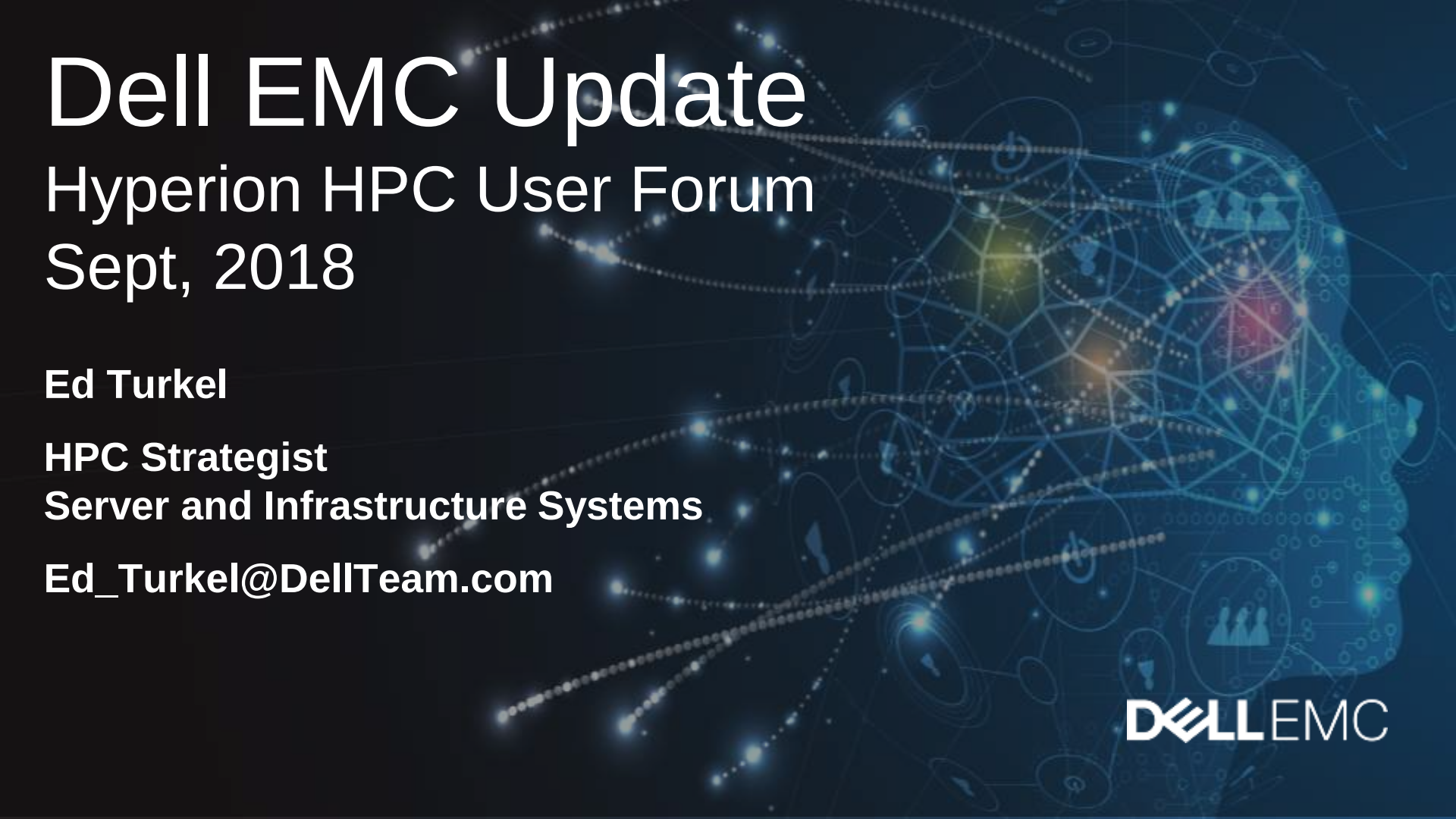
Dell EMC Update

Hyperion HPC User Forum
Sept, 2018

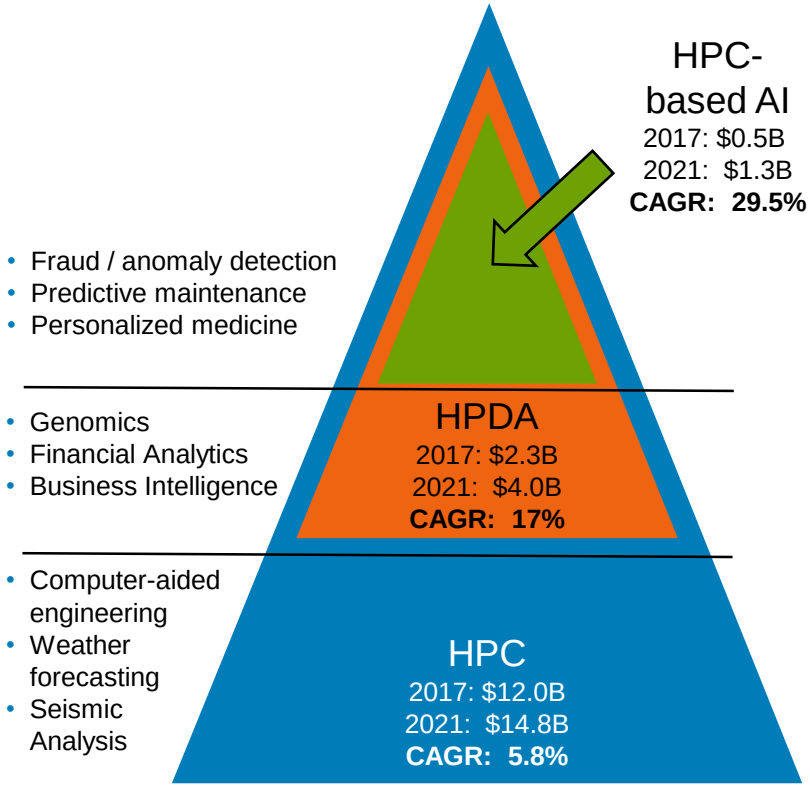
Ed Turkel

HPC Strategist
Server and Infrastructure Systems

Ed_Turkel@DellTeam.com



Importance of HPC to Dell EMC



Source: Hyperion Research

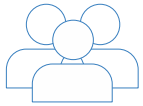
Forbes

"Companies will succeed and fail based on their ability to translate data...into insights and actions and products and services."

- Michael Dell

https://www.forbes.com/100-greatest-business-minds/person/michael-dell

Dell EMC Strategy for HPC



Domain Experience
& Expertise

Strategic
Partnerships

Technology
Innovations

HPC Innovation
Lab

Dedicated HPC
Sales & Soln. Architects

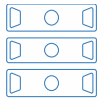
Dell EMC Ready Solutions for HPC

Artificial Intelligence

Data Analytics

Hybrid Cloud

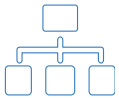
Dell
Workstations



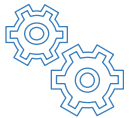
Dell EMC
Servers

Dell EMC
Storage

Dell EMC
Networking



Management



Services

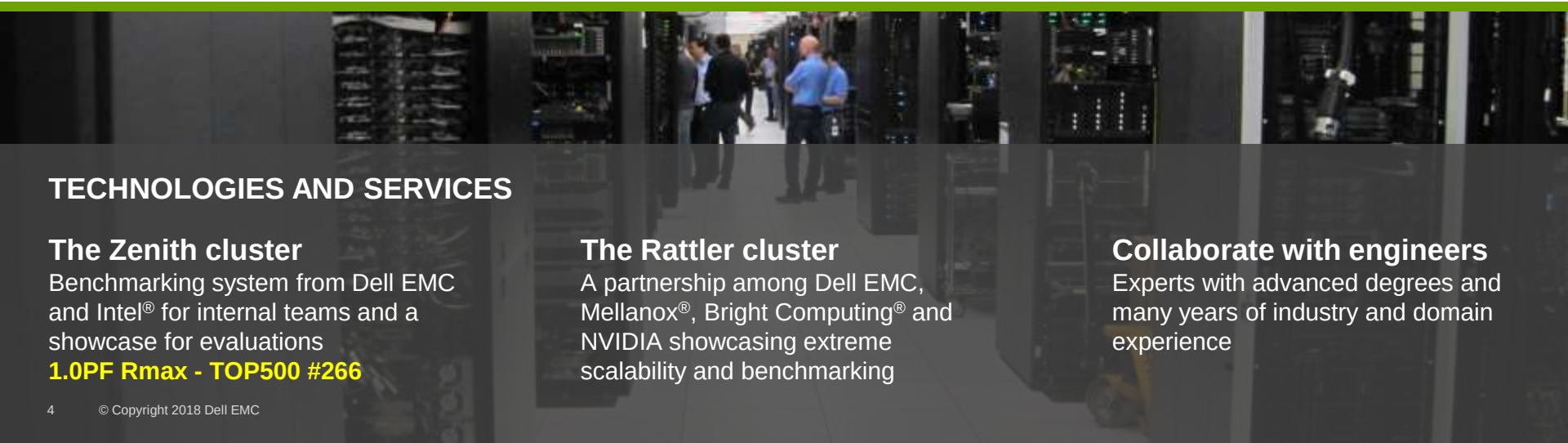
Cloud

Dell EMC HPC and AI Innovation Lab

Developing innovative high-performance computing technologies through community collaboration for world-class HPC systems

DELL EMC has an extensive portfolio of HPC solutions, global services and support providing measurable customer and partner benefits:

- System parameter sweeps – optimize application performance
- Efficiency tuning – determines ideal workload configurations
- HPC storage system optimization – through build and test



TECHNOLOGIES AND SERVICES

The Zenith cluster

Benchmarking system from Dell EMC and Intel® for internal teams and a showcase for evaluations

1.0PF Rmax - TOP500 #266

The Rattler cluster

A partnership among Dell EMC, Mellanox®, Bright Computing® and NVIDIA showcasing extreme scalability and benchmarking

Collaborate with engineers

Experts with advanced degrees and many years of industry and domain experience

National Science Foundation awards $60 million to the Texas Advanced Computing Center to build nation's fastest academic supercomputer

Building on the long term partnership between Dell EMC and UT Austin

“Supercomputers — like telescopes for astronomy or particle accelerators for physics — are essential research instruments that are needed to answer questions that can’t be explored in the lab or in the field. Our previous systems have enabled major discoveries, from the confirmation of gravitational wave detections by the Laser Interferometer Gravitational-wave Observatory to the development of artificial-intelligence-enabled tumor detection systems. Frontera will help science and engineering advance even further.”

Dan Stanzione, TACC executive director

TACC
TEXAS ADVANCED COMPUTING CENTER

DELL EMC intel

The Technologies of Frontera

- ~8000 Dell EMC PowerEdge C6420 Servers, powered by Intel Xeon Scalable Processors: ~40PF
- Direct Contact Liquid Cooling provided by CoolIT
- Mellanox HDR InfiniBand
- DDN Storage
- NVIDIA, GRC (Green Revolution Cooling) and the cloud providers Amazon, Google, and Microsoft will also have roles in the project.

Accelerating driver-assistance and autonomous-driving technologies

Business need

Zenuity needed a high-performance computing solution to accelerate the development of world-class driver-assistance and autonomous-driving technologies

Solution

- Dell EMC Isilon, Unity and Data Domain
- Dell EMC PowerEdge C Servers
- Dell EMC Networking
- Dell EMC VxRail™ hyper-converged infrastructure appliances
- RSA, Virtustream
- Consulting and deployment services

Dell Technologies is delivering Zenuity's HPC solution as a service, with everything managed by Dell EMC and Virtustream

Benefits

- Enable gathering 4.4 petabytes of data/month and run ~50 simulations per hour to put safety first in autonomous driving technologies
- Increased business speed and agility with managed services
- Sharpened the focus on software development

"It's really about anything that can gain us more speed and agility. It's about anything that keeps us focused on what we can do well, which is developing software for AD and ADAS, and not worrying about the IT infrastructure. − Marta Listula, senior director for Zenuity new technologies and leader of the company's Silicon Valley tech hub

ZENUITY
Make it real.

Powering the Future of Self-Driving Vehicles

Business need

Otto Motors wants machines in the dullest, dirtiest and most dangerous jobs via self-driving vehicles

Solution

- PowerEdge Servers
- Services and Support

Dell EMC and OTTO Motors drive a workforce transformation for their clients with self-driving vehicles. OTTO Motors partners with Dell Technologies to support rapid growth, design and testing for clients

Benefits

- Increased safety for workers
- Software is simulated hundreds of thousands of times for predictable robotic performance
- Reliable infrastructure critical to the core of the business
- On-premise servers 10x cheaper than compute in the cloud

"With Dell, we're not just getting some servers. We're getting the entire spectrum of services and support that we need to succeed." – Greg Jacobs, Engineering Manager of Infrastructure, OTTO Motors

OTTO MOTORS

Revving up autonomous mining

Business need

The Caterpillar Resource Industries product segment needed a high performance computing (HPC) cluster to rev up its autonomous mining program.

Solution

- PowerEdge™ M630 compute nodes
- Intel® Xeon® processor E5-2600 v4
- Lustre storage solution (360TB)
- NFS storage cluster for archiving and backup (480TB)
- Mellanox and Dell EMC switches
- Dell EMC integration, installation, configuration and support services
- Remote Cluster Management with X-ISS

Benefits

- A workload that might have taken nine months to run on a laptop computer now runs in about two hours.
- The HPC cluster helps the company's engineers quickly identify product issues
- The company is able to optimize its mining system and trucks on an ongoing basis.

"We laid out our requirements, and the people at Dell EMC took those requirements and developed exactly what we needed."

Thomas McCauley
Engineering Manager
Caterpillar Autonomous Mining Program

CAT®

Transforming the Future with HPC

Dell EMC's unique approach achieves faster results, enables discovery and drives design with optimized HPC solutions for better value through three focus areas:

1 

Advancing HPC – Trusted Advisors, from the workgroup to the TOP500

2 

Democratizing HPC – Accelerating science, engineering, analytics and AI

3 

Optimizing HPC – Optimized products, solutions and services for HPC

Dell EMC HPC Community: www.dellhpc.org

www.dellemc.com/hpc

Dell EMC, Alces Flight to Create Hybrid HPC Solution for the University of Liverpool

December 8, 2017

BICESTER, UK, Dec

First Modular Supercomputer Starts Operation at the Research Center Jülich

November 13, 2017

, Nov. 13, 2017 — The second module of
ge as an entire supercomputer: the booster is

NOAA Looks to Dell for Massive Supercomputing Upgrade

January 9, 2018 by staff | Leave a Comment

Dell EMC PowerEdge Servers Enable University of Sydney's World-leading Artificial Intelligence Research

Artemis 3 supercomputer will power research into the development of artificial intelligence and machine learning

STORY HIGHLIGHTS

- New supercomputer will increase the speed and volume of data that can be processed in research across a range of faculties
- Dell EMC supercomputer will be an important component of the new UBTECH Sydney Artificial Intelligence Centre and its work to further technology such as drones and self-driving cars
- Named Artemis 3, this HPC system features the new 14th generation Dell EMC PowerEdge C4140 servers

SYDNEY, AUSTRALIA , JUNE 7, 2018 - Dell EMC today unveiled the Artemis 3 supercomputer that will power the University of Sydney's world-leading research and academic programs. This fully deployed high-performance computing (HPC) system uses Dell EMC PowerEdge C4140 server technology, The University of Sydney's $2.3 million system has an rPeak performance of 1 petaflops and an rMax of 700 teraflops, which will allow faster processing of data to provide answers to scientific questions previously beyond reach.

"The University's research continues to grow in computational intensity," said Dr Jeremy Hammond, director, Strategic Ventures, The University of Sydney, Australia. "To stay ahead of the volume and velocity of data being generated by scientific instruments and sensors, researchers need high performance computing (HPC) technology to collect and process data faster, in real-time, or thanks to artificial intelligence (AI) algorithms, with minimal human interaction."

MC Supercomputer to Power OzGRav Studies of Holes

Leave a Comment

Caterpillar | Resource Industries | United States