DELL Technologies

Customer profile

UNIVERSITY OF CAMBRIDGE

Higher education | U.K.

Advanced technology that is pioneering African research

A University of Cambridge collaboration with Dell Technologies promotes digital equity in powerful computing technology.

The University of Cambridge, Cambridge Research Computing and Dell Technologies engineered a supercomputing infrastructure for Mohammed VI Polytechnic University (UM6P) in Morocco. It allows scientists across Africa to work with massive data volumes, spearheading research innovation that can improve the quality of life and nutrition for millions.

Transformations

Promoting digital equity and human progress with today's most powerful computing technology, benefiting researchers globally.

Enabling data-driven, collaborative research that can better millions of lives.

Outcomes

Enables researchers in Africa to focus on projects that benefit their own communities.

Provides next-generation HPC to scientists to tackle highly consequential, urgent problems such as ensuring food security.

Proves the effectiveness of academic and industry collaborations in accelerating innovation.

The University of Cambridge's Research Computing Services and the Cambridge Open Exascale Lab have created a model for academic and industry collaboration. Together with Dell Technologies and Intel, they have built a high performance computing (HPC) infrastructure for the university that revolutionizes what researchers can accomplish.

Powering research across the globe

This collaborative model once again proved effective at the Mohammed VI Polytechnic University in Morocco. Dr. Paul Calleja, Director of Research Computing Services and the Exascale Lab at the University of Cambridge, says, "Dell Technologies has delivered year after year, really understanding and valuing a three-way design partnership with users, service providers and technology vendors. That co-design methodology helps us understand and meet scientists' needs."

Engineering and maintaining supercomputing can be prohibitively costly and labor-intensive, but the University of Cambridge's Research Computing team and the Exascale Lab aim to make their technological breakthroughs widely accessible. Calleja says, "The Cambridge Open Exascale Lab uses next-generation supercomputer technology with systems 50 times larger than those commonly used today. We're always looking to democratize these technologies and make them available to everyone."

Advancing supercomputing in Africa

UM6P presented the University of Cambridge with an opportunity to further its goals for disseminating HPC. "Our collaboration with UM6P began through an engagement with Dell," Calleja recalls. "The Moroccans wanted to drive computing in the region. They had a vision of deploying Africa's fastest supercomputer."

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>
> **Dr. Paul Calleja**
> Director of Research Computing Services and the Exascale Lab, University of Cambridge

Dell Technologies facilitated a collaboration with UM6P's African Supercomputing Center (ASCC) and Cambridge Research Computing. Together, the parties developed Toubkal, Africa's first top 100 supercomputer. Toubkal — named after the highest mountain in southwestern Morocco — comprises 1,300 Dell PowerEdge servers with Intel® Xeon® Scalable processors and over 8,000TB of storage.

Solving critical issues

Given the urgency of research that ASCC could support, Cambridge Research Computing managed the Toubkal deployment remotely instead of delaying it during the pandemic. Today, the UM6P supercomputer serves researchers and data scientists who conduct important work in such areas as genomics, food security and agriculture, bolstered by AI and data analytics. They model satellite data to improve agricultural land management, meteorological data to make greater use of renewable energies, and the genomes of African nutritional plants that should be protected. These efforts could benefit millions of people across the continent and beyond.

Calleja comments, "[Toubkal] is Africa's first top 100 supercomputer, driving research projects across the region and exciting young African researchers who are exploring what's possible. They are working with African infrastructure to drive African research projects."

See how University of Cambridge democratizes breakthrough technology.

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