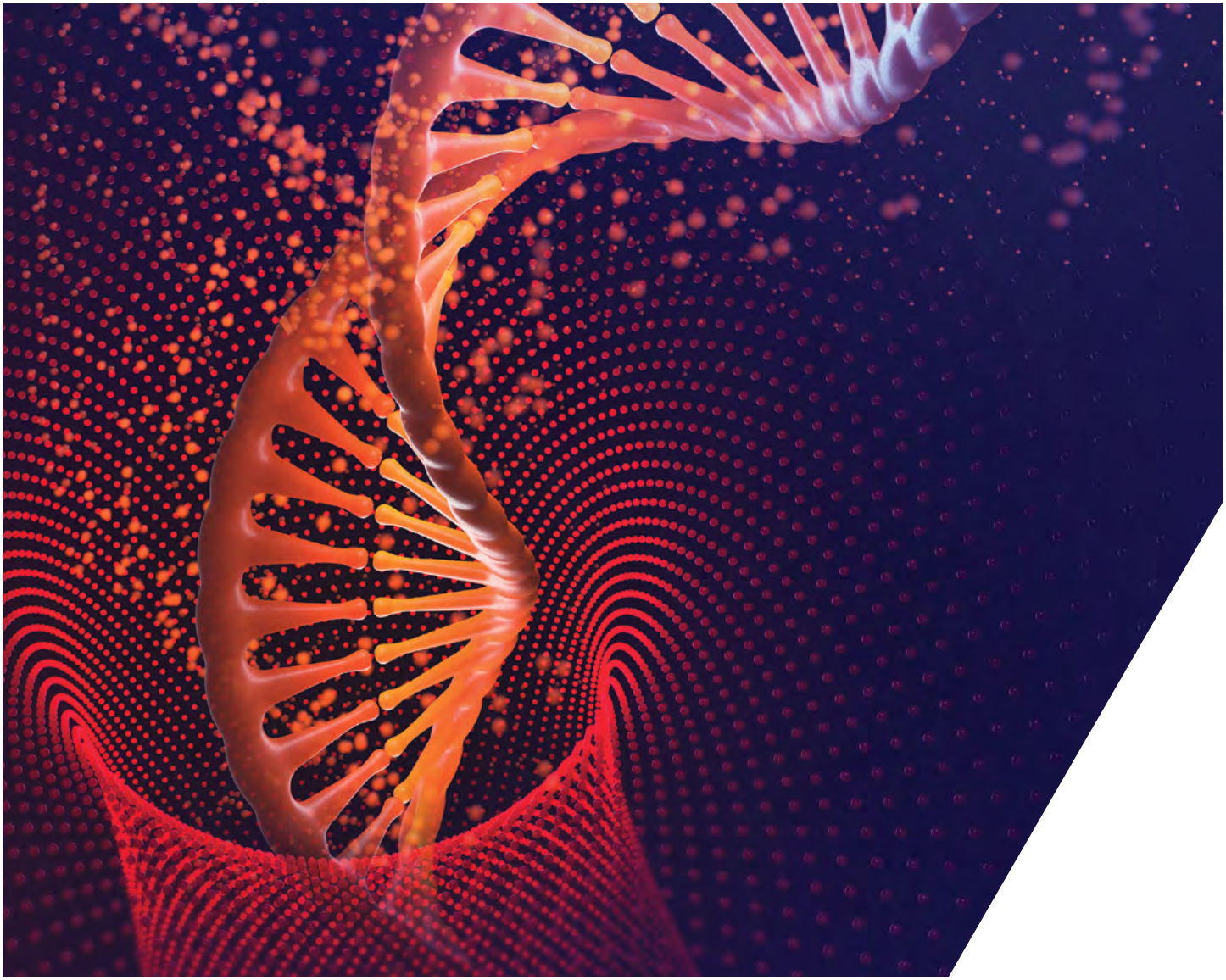

EXPANDING LIFE SCIENCES RESEARCH

WELLCOME CENTRE FOR HUMAN GENETICS BROADENS RESEARCH WORKLOADS

About the Customer

The Wellcome Centre for Human Genetics (WHG) is a leading research institute within the Nuffield Department of Medicine at the University of Oxford. WHG is situated on the University's Old Road Campus in east Oxford — one of the largest concentrations of biomedical expertise in Europe. With more than 400 researchers, the Centre is an international leader in genetics, genomics, statistics, and structural biology. WHG's mission is to advance the understanding of genetically-related conditions through a broad range of multi-disciplinary research.

> "The conversion from the previous scheduler to Altair Grid Engine was virtually painless. Our users are happy that their hard-won knowledge continues to be relevant, significant scheduler bugs and vulnerabilities were fixed, and we also save on our own precious system administration time.
>
> Dr. Robert Esnouf, Head of Research Computing Core, Wellcome Centre for Human Genetics, University of Oxford

The Wellcome Center for Human Genetics needed to plan for growth and accommodate new, emerging workload types

To support its research community, the Centre operates a shared HPC cluster comprising more than 4,000 InfiniBand-connected, high-memory compute cores and 4PB of high-performance, parallel storage running about 250 applications, many of which were developed in-house.

Their Challenge

With continuing **rapid growth and new types of workloads** expected, WHG was reaching the limits of their previous open-source Grid Engine scheduler, plus there were no practical options for support or addressing software bugs and security vulnerabilities. The team was working around issues rather than fixing them. With the increased use of machine learning and applications developed for containerized deployment models, the lack of scheduler support for GPUs and container platforms like Docker was a concern. WHG also needed to run high-performance data analytics workloads using Apache Spark and **required a modern scheduler** to run their full variety of workloads (serial-batch, array jobs, MPI jobs, container workloads, Spark jobs) on the same shared cluster.

Our Solution

After an internal evaluation process and consulting with their user communities, WHG selected Altair® Grid Engine® as the scheduler to **power their HPC environment**. Dr. Robert Esnouf, head of research computing at WHG, shared some of their goals related to the new scheduler deployment. “The main goal was to provide an up-to-date scheduler, with available technical support, that would require a minimum of user and sysadmin retraining. The emergence of deep learning and image processing applications has also meant that we need to be able to support GPU and other technologies within the same administrative framework.” On deployment, WHG immediately saw the benefits of the multi-threaded scheduler in Altair Grid Engine. It enabled them to take advantage of multi-core head nodes and **deliver better scheduling throughput and faster response** for users and administrators monitoring cluster status and workload progression.

Results

The Wellcome Centre for Human Genetics realized several benefits from Altair Grid Engine: a **seamless migration**, enabling them to retain existing investments in skills and application integrations; **reduced time spent on day-to-day cluster management**, freeing staff to spend more time proactively supporting their researchers; and **access to new capabilities** like GPU-aware scheduling, DRMAA2, and container support, putting WHG in a position to embrace emerging research techniques and support a wider range of research. Deployment of Altair Grid Engine — a **modern scheduler that supports new techniques for advanced research** — will reduce the need for future disruption as work patterns evolve, ensuring maximum value from capital investments.