

# VERNE

## CUSTOMER SUCCESS STUDY

### Why Icelandic HPC is bioinformatics' best friend

Earlham Institute locates HPC research applications at Verne's specialist data center campus

Life sciences and bioinformatics increasingly rely on data-driven technology to enhance the accuracy and speed of research. High performance computing (HPC) is critical to research output and must be underpinned by effective storage and computing resources. However, the high costs connected to HPC hardware and the technology needed to capture, store and analyse huge amounts of research data have previously been a barrier for many in the industry. This is particularly the case for organisations involved in bio-computational workloads where, for example, high-throughput DNA-sequencing instruments generate huge data sets - from a few hundred gigabytes to several terabytes per run.

The UK's Earlham Institute (EI) is one of the world's leaders in life science research, focused on exploring living systems by applying computational science and biotechnology to answer ambitious biological questions. One of a few organisations supported by the Biotechnology and Biological Science Research Council, EI's advanced genomics and computational platforms and data-intensive research drive innovation in modern science.

#### Challenge

EI is constantly dealing with large volumes of data arriving at very high velocity. Like any research institute undertaking data-driven science, this puts significant strain on its computing infrastructure, requiring increased storage space and greater demands on the data center hosting capability. Given the sensitive focus and competitiveness of its work, organisations like EI can be reluctant to put all data in the cloud for privacy and security reasons, yet it does require the cloud to facilitate unique collaborations. As such, the Institute needed a strategic data center partner offering scalable, cost-efficient, secure solutions, that could distribute its large-scale genomics and computing biology data analysis but without losing sight of where data is at all times.

#### Solution

EI selected Verne's data center campus in Iceland because it provides flexible, scalable, secure data center solutions specifically optimised for HPC computing - all supported by a specialist and expert technical team. Also, with access to one of the world's most modern and reliable power grids, utilising 100% renewable energy and uniquely located on a former NATO base, Verne offers a highly competitive, secure and low-risk environment for HPC research applications.



We are very excited to be partnering with Verne in Iceland, which not only supplies high density computing at significantly lower energy costs, but can also delivers excellent global network communications and data center security.

**Sarah Cossey**  
Director of Operations  
Earlham Institute



# Results



## Sustainable cost savings

Iceland's advantageous power profile allows EI to access long-term and predictably priced energy, delivering impressive savings and reducing the Institute's total cost of ownership (TCO). Due to the geothermal and hydroelectric sources of power, plus the ambient air cooling due to Iceland's temperate climate, EI will save up to 70% in energy costs - and will significantly reduce its carbon footprint.



## A technology first

EI deploys some of Europe's largest shared memory computing resources dedicated to life sciences - including a large, high-throughput compute cluster, comprising more than 4,000 processing cores and over seven petabytes of storage, plus 64 terabytes of the latest Intel NVME Flash technology for demanding critical tasks. These platforms are routinely used by researchers to assemble large and complex genomes. In a first for a UK academic institution, Verne's access to the National Research Education Network (NREN) enabled EI to migrate its strategic, collaborative bioinformatics analysis platforms and connect the main campus in Norwich, England with the data center in Iceland.



## Leading the way

With Verne, EI is keeping UK life science research firmly at the forefront of the data-driven science revolution. Unlike traditional data centers, hyperscale cloud or on-premise options, Verne provides EI with the true HPC support critical to its research output. With significantly more DNA-throughput enabled by this technology, its genome sequencing is expected to become even more accurate and unique. Indeed, its very science is underpinned by the storage and computing resources that reside in the Icelandic data center today.

## Cross border collaboration



The partnership between EI and Verne illustrates how leading scientific and academic research organisations can embrace HPC across borders and realise their ambitions.



Earlham Institute will save up to 70% in energy costs by moving to Verne's data center campus.



As part of our continuous improvement programme we are looking at efficient ways to deliver world leading science; working with Verne we aim to deliver the same services, at a better cost, while improving our business continuity for data centers.

**Sarah Cossey**  
Director of Operations  
Earlham Institute



**Make an impact  
from the ground up.**

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