EXCELLERAT

CO-DESIGN
FOR ENGINEERING APPLICATIONS

The **Co-Design Service** has access to cutting-edge hardware for testing, and users of this service can discover how their source code, or its proxy, will need to adapt.

Our Co-Design Service can **incorporate data analytics and data management**: a test lab for emerging technologies, validation and benchmarking, node-level and system-level performance optimisation and management of the co-design service itself.

To date, our new hardware includes both **CPU and GPU clusters** from vendors such as AMD, ARM, HPE SGI, IBM, and NVIDIA, plus vector machines from NEC and FPGA clusters from Xilinx.

SERVICES

- **Consultancy: Collaboration between hardware and software developers** to ensure engineering applications from industrial end users will run efficiently as soon as the hardware is released
- **Tools:** data analytics and data management

CHALLENGES

- To ensure that **end users can quickly run their applications efficiently** on future Exascale machines, the HPC centres should ensure the application authors and the target vendors have collaborated
- Ensuring the **applications function with large datasets** at the Exascale
- The **applications should be compatible with all HPC programming languages** in use today, both legacy and modern

SOLUTION

- **Provide the HPC vendors access to the source code**, or its proxy, and update their tools accordingly
- Ensure that HPC vendors and the owners of key applications collaborate to future-proof these applications

UNIQUE VALUE

The unique value of our Co-Design Service is that it is staffed by experts in the fields of Engineering, HPC, and the required performance of future simulations. EXCELLERAT experts act as an intermediary, speaking the languages of both the application owners and the HPC vendors.

BENEFIT FOR HPC PROVIDERS AND HPC TECHNOLOGY PROVIDERS

- Ensure **applications run efficiently** from the day the platform is accessed to avoid any lag time
- Substantially **reduce operation costs** via simulations that require Exascale supercomputers
- The more applications that run efficiently on a vendor's HPC platform, the more likely it is that HPC centres will purchase that platform

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