High Performance Computing (HPC) Wales

Supercomputing for SMEs and Academics
What Can HPC Wales Do For You?

- Simple and Remote access to:
  - High Performance Computing technology
  - Scientific and commercial consultancy
  - Application and optimisation training and support
HPC Wales Offerings

1. On-demand Processing Power
   - Ready to use parallel computational processor power
   - On demand from small scale to large scale using own applications

2. Rendering
   - Creation of high definition images using masses of computational capability
   - Faster time to market, higher resolutions, increased creativity

3. Computer Associated Engineering as a Service
   - Simulation modelling for design, development and prototyping
   - Reduced cost of entry, ROI proof point, scale on demand

4. Training Services
   - Skills training and education to understand and apply HPC technologies
   - Developing skills that match industry demand
Where Is HPC Being Applied?

- Life science and Drug development
- Global change prediction for disaster prevention / reduction
- Rendering animations & Transcoding
- Industrial Innovation
- The origin of matter and the universe
- New materials & Energy creation

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The UK’s Largest Distributed Supercomputing Network

- Simple remote access from anywhere in the world (with an internet connection!)
- Rapid processing capabilities with a network of 17,000 Cores linked together with high speed interconnects
The Fujitsu - HPC Wales Partnership

- **Technology, Consultancy and Training**
  - Fujitsu has supplied and installed HPC Wales’ supercomputing infrastructure
  - Fujitsu provide on-site and remote assistance in the on-boarding process
  - Fujitsu manage and support a help desk for users of the HPC Wales system
  - As part of HPC Wales phase 2, Fujitsu are looking to offer benchmarking support, ‘code tuning’ and remote & on-site training
HPC Wales: Usability at first login

- Simplified HPC access through web-based gateways
- Point and click interface, no prior knowledge required
HPC Wales’ Sector specific Gateways

- Accelerate processing; Automated and optimised workflows
- Access an ever increasing range of software
- Access thematic online knowledge base and discussion forums via intuitive gateways
HPC Wales’ system runs a Fujitsu SynfiniWay workflow, an active and intelligent system moving and balancing workload to optimise the performance resulting in reduced time and cost and increased efficiency and reliability of results.
In the above example the desktop computer renders a few frames of the 125 frame animation in the same time it takes the HPC system to render the entire animation (125 frames). The HPC Wales system also encodes the frames into a movie.
"Koenigsegg has embarked on an ambitious challenge to develop a **market-leading hyper car in just six months** with a small advanced-engineering team”

- To achieve this ambitious goal, Koenigsegg have partnered with HPC Wales, ICON and Fujitsu
- The partnership worked to resolve unique and specific problems and outcompete larger competition
Fujitsu, in collaboration with HPC Wales have provided 20 Funded PHD Studentships across a variety of sectors within Welsh Universities including Environment, Physics, Manufacturing, Life Sciences and creative industries.

“On a desktop PC, just one of the ice simulations would take a year to run, whereas on HPC Wales’ systems I can carry out several hundred of them.”

Sophie Wilmes, School of Ocean Sciences, Bangor University