

Using supercomputing to design safer vehicles



Hartree Centre
Science & Technology Facilities Council



simpact
superior impact solutions

The Hartree Centre's on-demand high performance computing (HPC) service, enCORE, managed by channel partners OCF, has enabled Simpact Engineering Ltd to halve the time required to solve vehicle crashworthiness simulations.

Challenge

Designing safer road vehicles demands in-depth understanding of how they will perform in crash situations. With the continuous need to cut development costs and time-to-market, virtual testing through competitive hardware and sophisticated finite element simulation software has now overtaken expensive, time-intensive physical prototyping. On behalf of a major automotive client, Midlands-based impact safety specialists, Simpact needed to obtain results of vehicle models comprising typically of 10 million elements in challenging deadlines. This was only possible if the company could quickly and cost-effectively upscale its in-house computing hardware.

Solution

Simpact harnessed the Hartree Centre's HPC simulation and modelling capabilities via the 'use-what-you-need-when-you-need-it' enCORE service, delivered by OCF. The service gave Simpact access to one of the world's top 500 supercomputers – IBM's Linux-based 'Blue Wonder' cluster, located at the centre, and incorporating nearly 18,000 cores. Simpact integrated their office based LS-DYNA 3D simulation software licence and after a successful series of benchmarking tests of running frontal impact models up to 256 cores, fully commissioned the service.

Benefits

Using the enCORE platform enabled Simpact to achieve a reduction of over 50% in time required to run their vehicle models. This helped them meet the tight deadlines of the vehicle design process. By working with specialists from the Hartree Centre and OCF, Simpact enjoyed the access to the capabilities it required and avoided the need to invest in specialist multi CPU hardware in-house. They were also confident in the knowledge that highly confidential data passing between the Hartree Centre and the company would be totally secure. The outcome was a clear demonstration of how intense computing can accelerate the design and innovation cycle – and of how enCORE's flexibility and cost-effectiveness can equip smaller companies to compete with much larger organisations.

"For a high-tech SME like Simpact, the ability to access leading-edge HPC capabilities through a pay-as-you-go delivery model – with all the convenience of operating from our own offices – is a real game-changer, helping us meet customers' cost and timescale requirements and boosting our capacity to compete and thrive in the global market."

– Tim Williams, Director, Simpact Engineering Ltd

Work with us

We collaborate with industrial clients and research partners on projects that create insights and value using high performance computing, big data analytics, simulation and modelling.

By combining our world-class facilities with access to our specialists and computational scientists, we can enable your organisation to produce better outcomes, products and services more quickly and cost-effectively than through conventional R&D workflows.

With our partners we are developing the next generation of supercomputing architectures and software, combining existing best practice with innovation to deliver faster, cooler and more sustainable solutions capable of meeting the challenges of data intensive computing.

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