

Expanding HPC options for catastrophe modelling



Hartree Centre
Science & Technology Facilities Council

OASIS
open architecture
catastrophe modelling

The STFC Hartree Centre has enabled the Oasis Loss Modelling Framework to optimise the functionality of its software by demonstrating new techniques for the code to run on larger scale, high performance computing (HPC) environments.

Challenge

The damage caused by natural disasters can be devastating, and the resulting distress is heightened by the financial shock and unpredictability of such an event to the insurance industry. In order to provide greater clarity as to the frequency and severity of such catastrophes, insurance companies must use specialist software packages to predict and model the potential outcomes of major events such as flooding, hurricanes or even tsunamis. This allows them to provide more accurate pricing and assess the adequacy of their capital - thus protecting their businesses.

Oasis Loss Modelling Framework is one such software provider, and is a leading supplier of open architecture loss modelling for the global community. One challenge for Oasis was to demonstrate that their software would run quickly on a range of computing platforms. Existing use of a Massively Parallel Processing (MPP) "appliance" supercomputer had shown that a proprietary and expensive version of HPC could run fast, but performance on industry-standard and open source servers was poor. Options for its customers were therefore limited for the very large datasets that the latest catastrophe loss models require.

Solution

The Hartree Centre provided computational expertise to help Oasis demonstrate that its platform would run on a distributed computing environment. The company used the Hartree Centre's HPC facilities, including the iDataplex Blue Wonder, and the expertise of its computational scientists, to successfully demonstrate that the platform will scale up significantly on a distributed environment using MySQL. It also provided the recommendation that the Oasis team investigate memory-based calculations for their "kernel" processes.

Benefits

Through this project, the Hartree Centre has provided Oasis Loss Modelling Framework with a roadmap for future developments to enable them to enhance their offering. Specifically, Oasis has now developed a distributed version and will develop an in-memory version for its future releases. Faster, more efficient compute capability will benefit all users of their software.

"The independence and depth of knowledge enabled us to get world leading expertise to demonstrate practical parallel processing and the potential of an in-memory option."

– Dr Peter Taylor, Technical Director, Oasis Loss Modelling Framework

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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