

# Platform™

The Power of Sharing

*“The results of this project exceeded my expectations. I anticipated lots of technical grief, but it simply didn’t happen—everything went smoothly. We have seen increased load, and more simulation runs than ever before with the new system.”*

John Hybertsen,  
Technical Projects Manager  
StatoilHydro

## Enterprise-wide Compute Grid for Reservoir Simulations

**Customer**  
StatoilHydro

**Industry**  
Oil & Gas

### Challenges

- StatoilHydro needed to give its reservoir engineers more compute power to execute complex, data-intensive simulations faster
- Despite over-provisioning, local clusters couldn’t meet peak demand loads, restricting the ability to generate highly accurate results needed for cost-effective drilling

**Solution**  
Platform LSF  
Platform LSF MultiCluster  
NICE EnginFrame

### Results

- All users, regardless of location, now have access to a single enterprise-wide compute grid and to the group’s full complement of computers
- An intuitive, web-based portal simplifies global job submission and provides better visibility into job execution
- It is no longer necessary to have computer resources located at all sites, resulting in less fragmentation and better utilization
- The amount of simulation work that engineers can perform has significantly increased

### Rising costs of drilling put pressure on generating accurate modeling

Reservoir engineers in the Sub-Surface Division of StatoilHydro ASA, a Norway-based oil and gas company and one of the world’s largest crude oil traders, use sophisticated 3D simulation applications to search for oil-bearing structures in the Earth’s crust. These applications involve vast amounts of data, large numbers of complex calculations and, require thousands of iterations to produce accurate results.

The rising cost of drilling and the high cost of an error in choosing a drilling location put StatoilHydro engineers under increasing pressure to produce ever-more accurate modeling results. However, compute clusters at several StatoilHydro locations in Europe and North America were not meeting engineers’ needs for ease-of-use in job submission and adequate processing power to run sufficient iterations of their models.

Initially, each of StatoilHydro’s four locations in Norway, and one each in Houston and London, independently operated local computing infrastructure consisting of engineering workstations and server clusters ranging in size from 64 to 400 CPUs. This caused a number of problems. Firstly, each location invested in its own computing equipment, and had to over-provision its respective cluster to accommodate peak periods of activity. Secondly, the disparity in the number of CPUs available to each location created differences in engineering process consistency, performance and reservoir simulation accuracy.

To better meet current needs, and position the company for continued growth, StatoilHydro’s IT department turned to Platform’s technology to create a consistent, High Performance Computing (HPC) environment, to help foster a consistent methodology for job submission amongst StatoilHydro reservoir engineers worldwide.





"I have received lots of comments from our users that they really like the new system, especially because of the increased computing capacity that's readily available to them," says Hybertsen.

## StatoilHydro

### Global access compute resources

Platform helped StatoilHydro implement a global HPC grid with Platform LSF workload management software and Platform LSF MultiCluster to interconnect five clusters and six engineering groups, giving engineers access to all divisional computing resources. The grid not only allows computing resources to be managed centrally, but also gives engineers access to significant compute power anywhere in the world. Now, StatoilHydro has a robust and scalable computing platform that meets their current processing requirements and makes it easy to add more resources to support continued growth.

NICE EnginFrame, gives users an intuitive interface, greatly simplifying job submission to the grid, provides better visibility into the job execution process, and saves time for StatoilHydro IT staff by eliminating the need to maintain their legacy job-submission system. EnginFrame's ability to support the submission and monitoring of jobs by any skill level of user from anywhere in the world is a key component of StatoilHydro's grid.

"We're pleased that Platform included EnginFrame in their solution," says John Hybertsen, Technical Project Manager at StatoilHydro. "We see the web portal as an important part of our infrastructure vision. The NICE people did a great job of customizing it for our needs."

### From silo to enterprise grid in 20 days

In just 20 days, Platform implemented the grid, and demonstrated that this solution met all the Sub-Surface division's specifications for a new computing model that could handle their current and future needs. First, each local cluster was upgraded to the latest version of Platform LSF. Then, the local clusters were tied into a single global grid using Platform LSF MultiCluster so each engineer user, irrespective of their location, access to the division's entire complement of almost 1,000 CPUs.

StatoilHydro's reservoir engineers primarily use Schlumberger's ECLIPSE™. ECLIPSE™ can be very compute-intensive, involving huge amounts of data, large numbers of highly complex calculations and often, hundreds of simulations for every field analysis. Platform partnered with Schlumberger's software development team to produce a seamless integration between ECLIPSE™, Platform LSF and EnginFrame. This allows ECLIPSE™ users to perform significantly more iterations for multi-realization simulations on cost-effective server clusters, which in turn yields far-more-accurate results—when drilling for oil, even a small error in location can cost many millions of dollars.

Platform LSF allows StatoilHydro to dynamically grow the size of the grid by 'harvesting' unused CPU cycles as needed from some 185 user workstations across the division that are not running at full capacity. This accounts for nearly 25 percent of StatoilHydro's overall computing capacity, and is totally transparent to the workstation users.

### Deferring the need for more hardware

As a result of giving users access to greater computing power, StatoilHydro is seeing a significant increase in the amount of simulation work taking place throughout the grid—without having to add more computer hardware. The Harstad location, for example, would have needed to buy lots of new equipment to support its increasing use of the ECLIPSE™ application. It can now run simulations any time, eliminating the need for additional equipment. When StatoilHydro opens another location, as they have recently done in Houston, Platform LSF MultiCluster makes it a simple matter to implement additional clusters and add them to the grid.

# Platform™

Platform Computing provides software that dynamically connects IT resources to workload demand according to business policies. Over 2,000 of the world's largest organizations rely on our solutions to improve IT productivity and reduce data center costs. Platform has strategic relationships with Dell™, HP, IBM®, Intel®, Microsoft®, Red Hat®, and SAS®. Building on 17 years of market leadership, Platform continues to help data centers be more efficient, responsive and dynamic. Visit [www.platform.com](http://www.platform.com)

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