Pilot test using grid technology performed for a seismic imaging project: did you ever drive a Ferrari?

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Seismic data processing, reservoir simulation and algorithm validation have become the fundamentals of modern Oil & Gas exploration and production. All these processes require massive amounts of computing power, data storage and sophisticated software. Even the resulting data needs to be processed quickly and decisions taken quickly. In addition, it has become more and more expensive to invest in large processing centers. Today, Grid Computing is an original, low cost way to respond to these challenges by sharing resources and using standard software components for collaborative work and communication via the Internet.

EGEODE, the "Expanding Geosciences On-Demand" Open Virtual Organization developed by CGGVeritas, provides a suite of Grid computing services designed to meet the needs of Oil & Gas, including:

- An access to shared computing resources without investing in a large IT infrastructure;

- An easy way to use industrial software for seismic processing and reservoir simulation via a tailor made Grid portal;

- A set of remote visualization tools to perform processing, QC, supervision or collaborative work;

- A framework to share data and projects with other teams across Europe and worldwide;

- A platform to share best practices, support, and expertise with SMEs or research organizations.

This talk will detail the organization, infrastructure, application and tools used for the first real case study made during a pilot test on an existing dataset managed by a geophysical consultant from Petrosoft, an SME, for a customer both located in Czech Republic. Full project workflow consists in seismic data loading, velocity picking, noise removal with advanced filtering techniques, finishes with time migration and could include reservoir geophysics.

First of all, a description of the context of this project will be given to explain the main goal of the pilot test and the expected results of such an industrial trial.

Secondly, an overview of the global infrastructure deployed and utilized will be described. Midlleware installed at four resource centers spread out across Europe for enabling distributed computing and storage over the Internet will be showed.

Thirdly, details on the software used to perform the entire data processing procedure will be explained. Of course, the seismic data processing generic platform including the tool set available will be presented. The remote visualization solutions which were developed specifically to allow remote access for computing or quality control will be highlighted and the business model that fit customer needs will be summarized.

Finally some results in terms of usability of EGEODE for seismic processing and Oil & Gas business in an industrial context and environment will be pointed out.

References:

EGEE project: http://www.eu-egee.org/

BEinGRID project: http://www.beingrid.eu/

DEGREE project: http://www.eu-degree.eu

EGEODE: http://www.egeode.org/egeode/