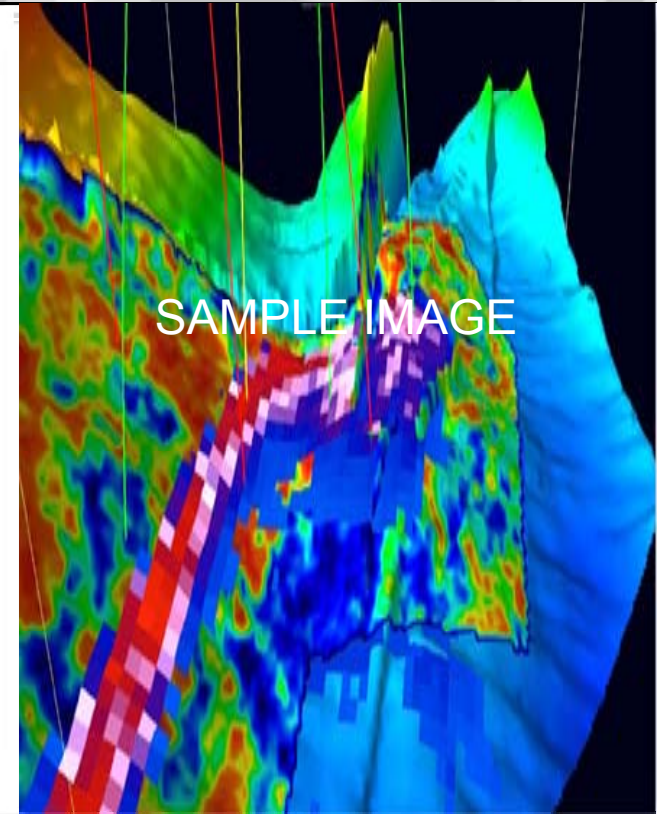


Solution to execute Geocluster on a grid environment

EGEE'08 Conference
Istanbul, *September 23rd, 2008*
Business Track - Modeling and Simulation

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COD and EGEODE services

Have you ever driven a Ferrari?

Vision: Become a provider of online and on-demand geosciences services for small and medium-sized O&G companies

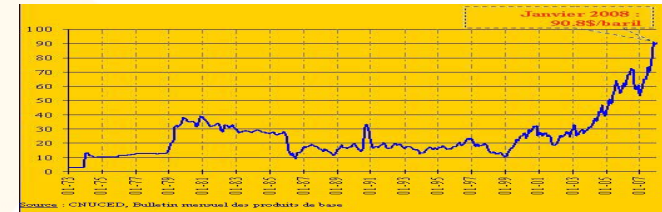
Oil and Gas: a huge market



1035 companies in the O&G sector within the EU

Market is worth approximately € 91 million (ref: "Observatory of European SMEs" document published by the EU)

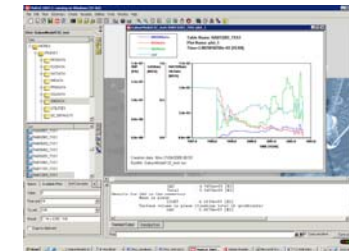
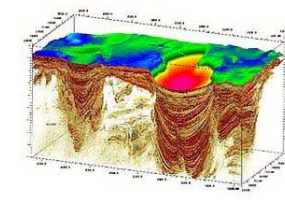
Capture 10% market share within one year



COD and EGEODE services

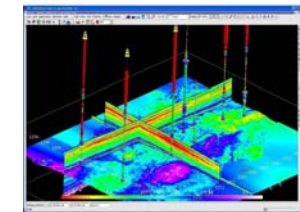
Sell computing power

Sell access to seismic data programs and reservoir simulation service



Reduce by 2 the overall turnaround time for a given project

Reduce from 30% > 5% the time spent going back and forth



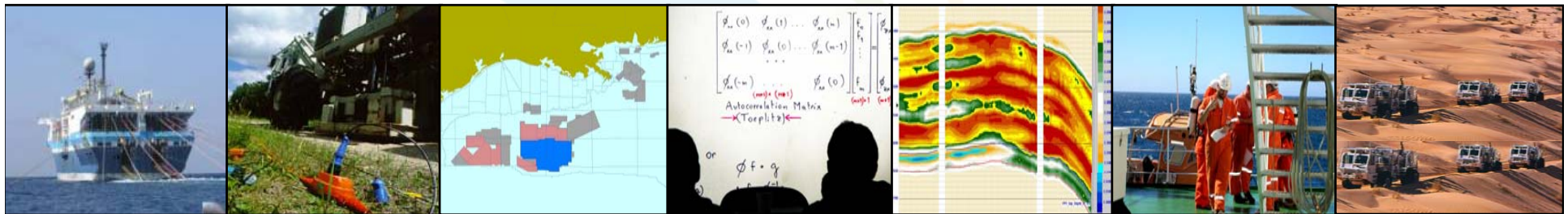
COD and EGEODE services

Have you ever driven a Ferrari?

Business opportunities

Sell Computing-on-Demand (CoD) to the small and medium sized companies that explore the earth's depths (ie. expand the market for Geosciences services)

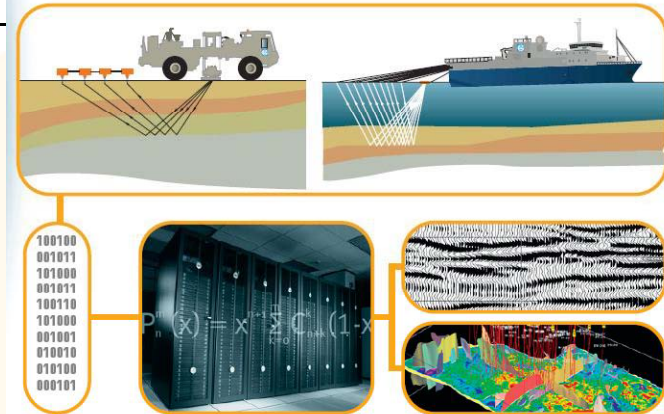
Sell geosciences processing services on demand to the small companies that explore the earth's depths (Expanding-Geosciences-On-Demand)



Background

Industrial Sectors

Industry sector including SMEs focused on Oil & Gas



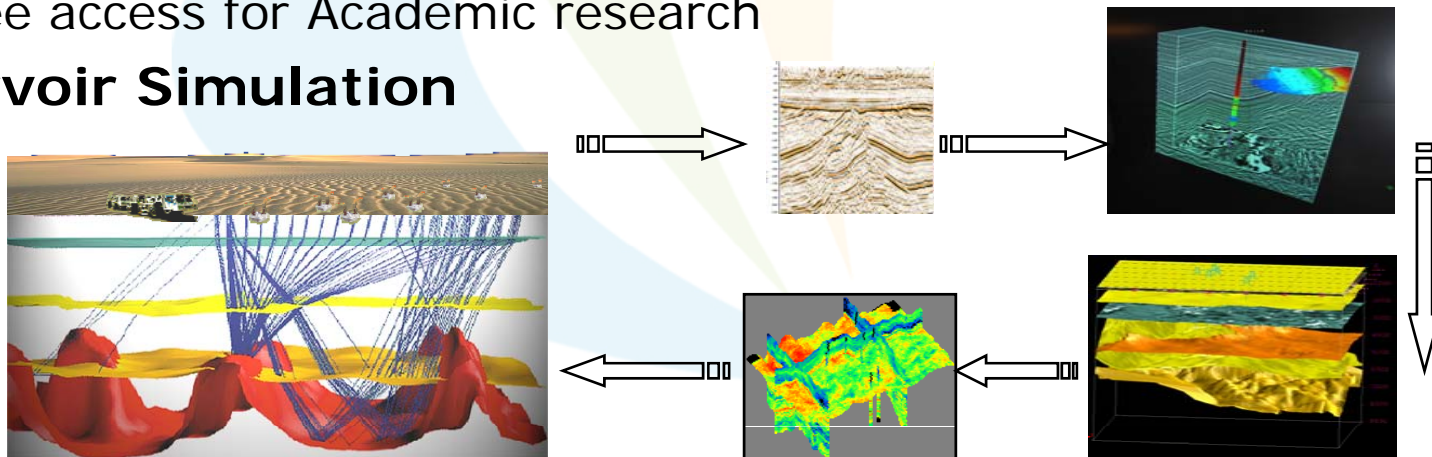
Overview of Applications

Geocluster *seismic processing* generic platform

The main initial focus of EGEODE Virtual Organization

Free access for Academic research

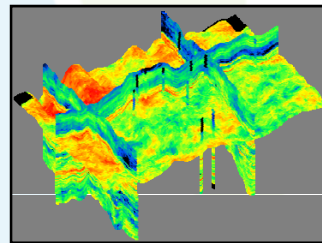
Reservoir Simulation



Background

Main objectives

1. Validate the technical viability of geosciences processing on the grid by consolidating EGEODE applications and packaging
2. Validate the economic viability by creating a model for economics suitable for EGEODE Virtual Organization



With added value

Solve complex problems and validate innovative algorithms on "real size" data sets

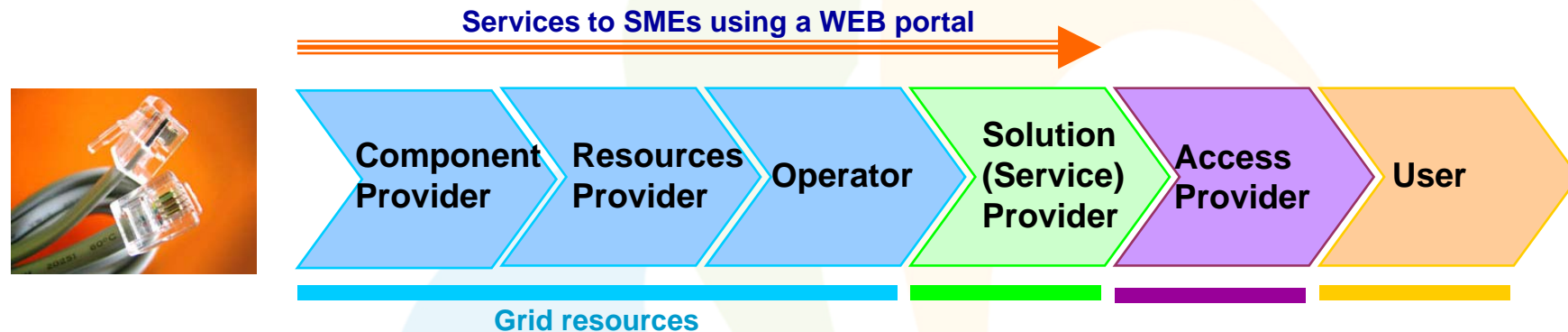
Close the gap between Research and Industrial environments

Attract and keep the brightest researchers

Provide a framework for Industry/Research collaboration

Product/Service/Solution

Sell access to seismic data processing programs and to a Reservoir simulation service (Expanding-Geosciences-On-Demand / EGEODE) via a Web portal.



Actors in the chain	Added value
Component Provider	Network, Hardware and Software components for the Grid Resource provider
Resources Provider	Provide computing resources and services
Operator	Provision and management of the Grid Platform
Solution (Service) Provider	Development and distribution of applications/services.
Access Provider	Activities related to brokering services.

Business Objectives



Connects the user to distant computing resources
Frees him from the additional burden of managing IT hardware and software
Creates a framework to share data and project resources
Allows collaborative work
Allows data and software to be accessed wherever and whenever

Increases business flexibility
Shortens the time-to-market
Accelerates the decision-making process



Benefits

Provides means to process data quicker

→ Reduces by 2 the overall turnaround time for a given project

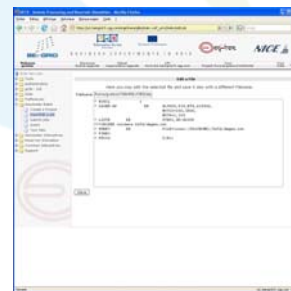
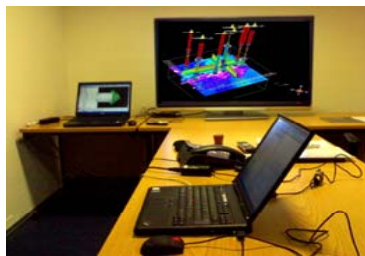
Provides access to the most advanced software and powerful computing resources

→ COD and EGEODE services

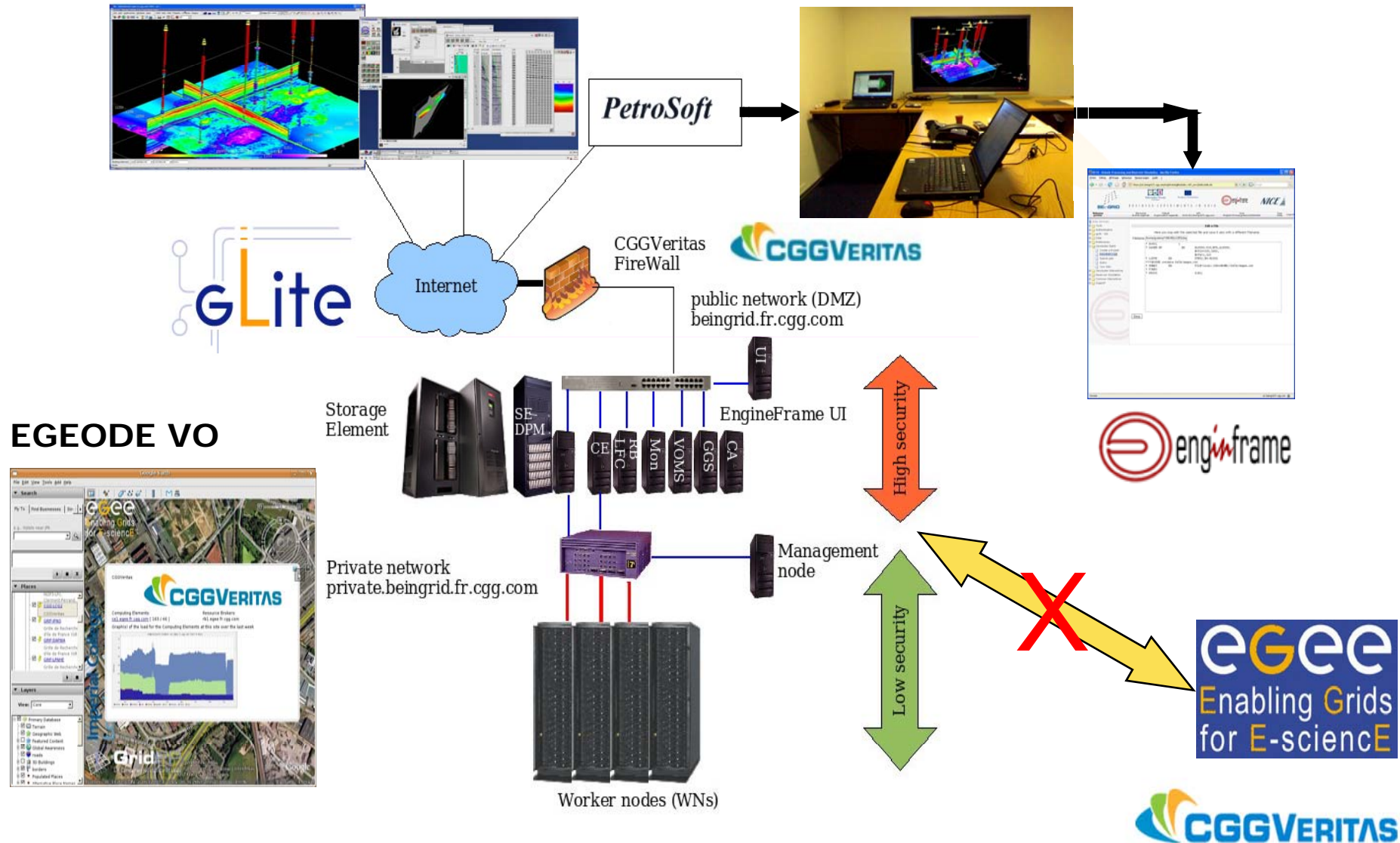
Facilitates the exchange of information and allows geographically distant colleagues to collaborate on projects

→ Reduces from 30% to 5% the time spent going back and forth

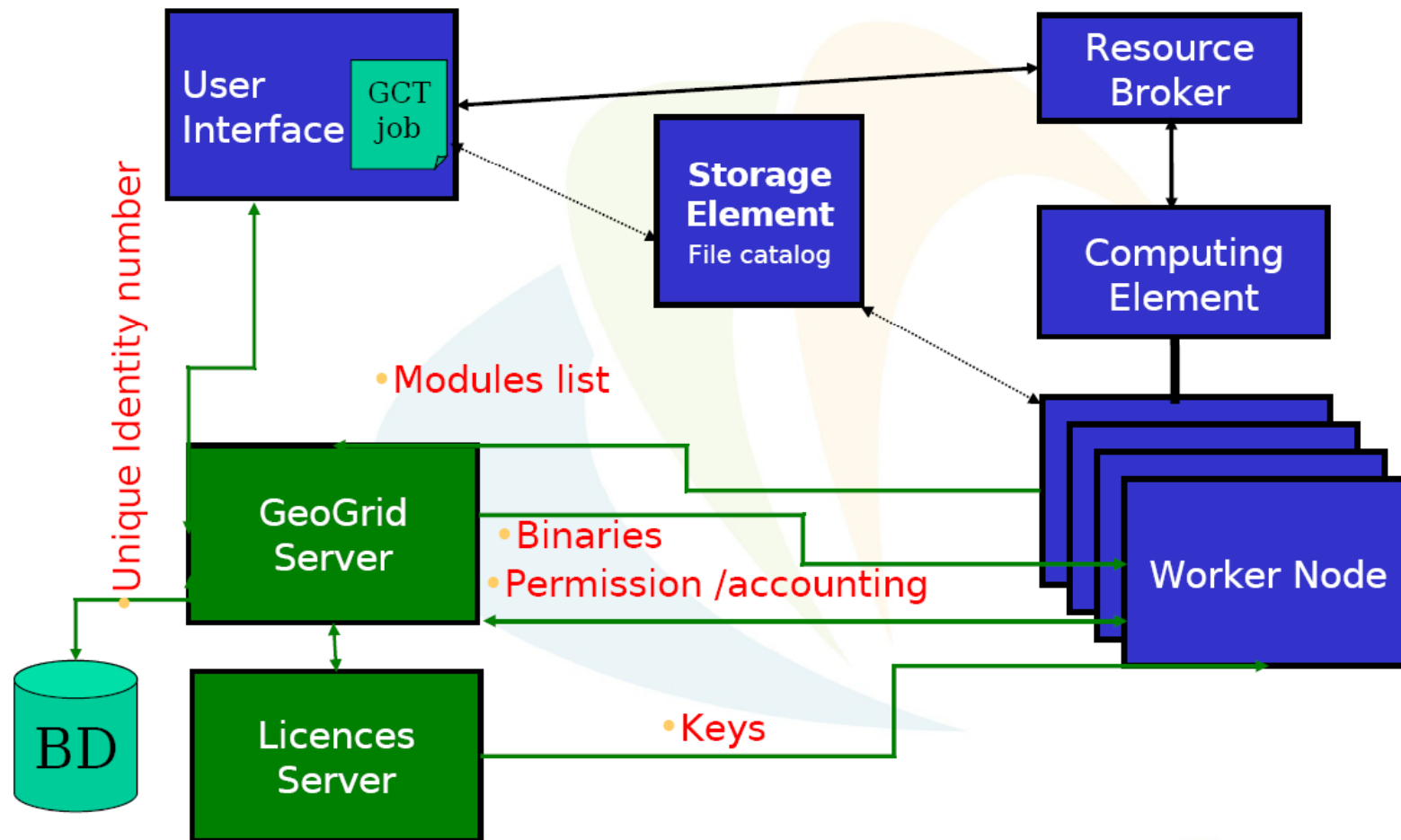
Pay-per-use means easier budgeting



Benefits: Process data quicker



Benefits: Provides access to the most advanced software



Benefits: Facilitates the exchange of information

Very easy to implement

As soon as the remote software (NX client) is installed, a small interactive program will allow you to **share your desktop**.

Fast and secure

Collaborative work with interactive software have been performed. **Non CGGveritas client can join a shared session but can do nothing outside shared session.**

Collaborative work

Training, know-how transfer, Velocity Picking under client supervision

Leadership of CGGVeritas

As far as we know, CGGVeritas is the main geophysical contractor to offer remote and collaborative use of its software.

Client QC of project

The **sharing mode** allows the client to follow **power point presentations** from his office. At any time, it is possible to **switch on the interactive programs**. All clients said it helps a lot in project turnaround. The **more involved** the clients, the **faster they decide**.

Supervision

Dedicated or regional center can easily **use main center supervision**. Client can also call for supervision.

Target customer & Target market

Target segment

Small companies/public entities that contract geosciences services (SMEs, Research centres, small projects of major Oil and Gas companies)

Target market

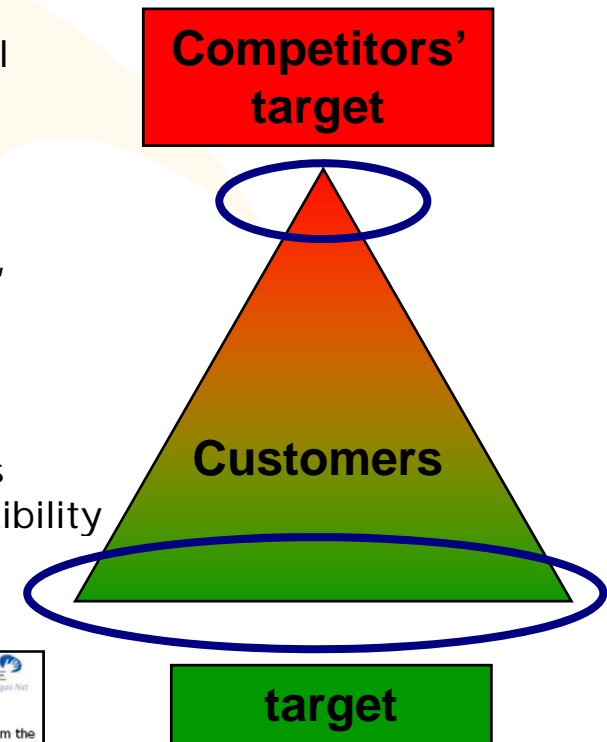
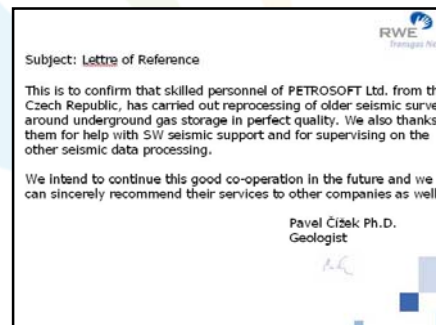
EU (1,035 companies: 95% are SMEs, 63% < 10 employees, worth approximately €91 million)

Success factors

- Simplified administration and optimization of IT resources
- Capacity to meet market shifts and increase business flexibility
- Cost reductions and decrease of data processing time
- Collaborative work available between the various stakeholders

Early adopters

- RWE Transgas (Czech Republic)
- Euro-Geologic (Slovak Republic)



Competition

	Offer a seismic service	Offer a reservoir simulation service	Free the customer from the IT burden	Services accessible via a web browser	Provide computing power on demand
Schlumberger Information System with Platform Computing		X			X
GX Technologies	X				
Landmark with United Devices		X			
3DGeo Development, Inc.	NA	NA	NA	NA	NA
Sun Microsystems			X	X	X
Westerngeco with Intel and IBM	NA	NA	NA	NA	NA
PGS with IBM	X				
IBM with Schlumberger Information Syst, Platform Computing		X			X
EGEODE services	X	X	X	X	X

SWOT Diagram

	Helpful	Harmful
Internal Origin	<ul style="list-style-type: none">▪ The EGEODE service is user-friendly and can be accessed anywhere▪ The Grid-computing is a scalable architecture and processes data faster▪ The data can be replicated▪ The EGEODE service allows for collaborative platforms▪ Good market and technical knowledge in the Oil & Gas and Grid technology domains	<ul style="list-style-type: none">▪ The reliability and security of the data must be proven▪ Internet speed is not homogeneous and is shared with other users▪ Network bandwidth is still an issue
External Origin	<ul style="list-style-type: none">▪ The Oil and Gas environment is constantly under pressure▪ The demand for exploration & geosciences services is increasing▪ The competitors underserved the SME segment	<ul style="list-style-type: none">▪ Customers might prefer certified solutions by ISV, or could keep their current solutions▪ Competitors could develop new services that would target the same segment



Financial Aspects

Investment

Non-interest loan of €500,000

Loan reimbursement of €125,000 each year from 2010 until 2013,
dividends payments

Key Performance Indicators for these business models

Find at least 5 early adopters by the end of the start-up period

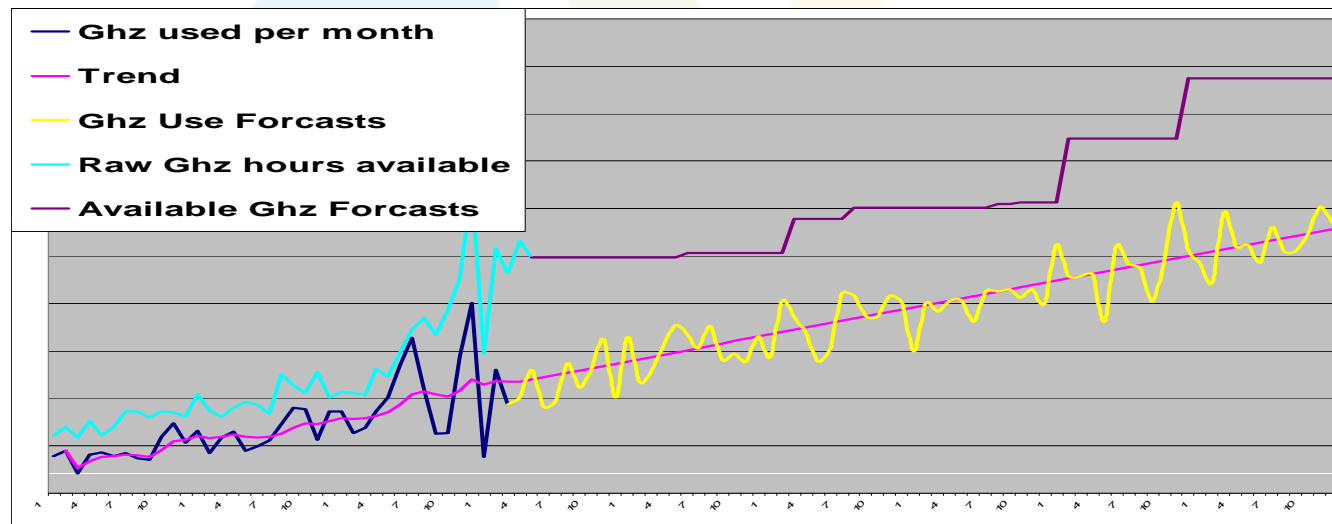
Achieve a positive cash balance by the end of first year

Achieve a ROE of 10% by the end of first year

Pay back the partners by end of the 3rd year of activity

Financial Aspects (estimations)

End of	2009	2010	2011	2012	2013
Sales objectives (Millions of GHz Hour)	2.05	7.03	12.94	21.52	32.38
Minimal sales Objectives required To keep positive cash balance. (Millions of GHz Hour)	1.07 Under this level it is necessary to collect more cash for the 1 st year (loans, investors...)	2.14	2.05	2.04	2.06



Financial Aspects (estimations)

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Minimal sales Objectives required to keep positive cash balance (Millions of GHz Hour)	1.07 Under this level it is necessary to collect more cash for the 1 st year (loans, investors...)	2.14	2.05	2.04	2.06
Estimated net profit (Euros)	128 098	1 205 477	2 658 070	4 551 795	7 012 754
Estimated Cash Balance (Euros)	246 781	436 386	1 688 984	4 171 657	8 494 279
Total inflows	19 855	331 704	868 705	1 699 233	2 911 210
ROI	4%	66%	174%	340%	582%

Break Even year

Conclusion

COD & EGEODE services: Have you ever driven a Ferrari?

Become a provider of online and on-demand geosciences services for small and medium-sized O&G companies

Sell Computing-on-Demand (CoD)

Sell geosciences processing services on demand

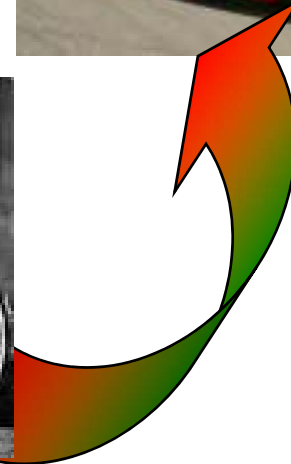
- *Seismic processing generic platform*
- *Reservoir Simulation*

Market is worth approximately €91 million

Obtain 10% market share within one year

Reduces by 2 the overall turnaround time for a given project

Reduces from 30% to 5% the time spent going back and forth



EGEODE, the "Expanding GEosciences On-Demand" Open Virtual Organization 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

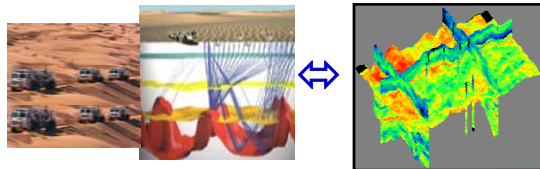


Pilot test

2D survey from Moravia in Czech Republic
 Geocluster batch modules and Interactive applications
 Data size: Total length of lines 10.5 km; Sample rate 2ms
 Record length 3 s; Estimated size: 200-300MB
 Format: SEGY or CGG-F3

Industrial Sectors
 Industry sector including SMEs focused on Oil&Gas

Overview of Applications
 Geocluster seismic processing generic platform (CGGVeritas)
 The main initial focus of EGEODE Virtual Organization
 Free access for Academic research

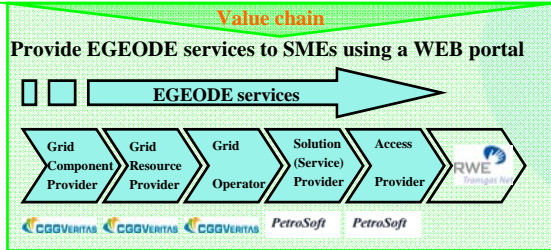


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1. Validate the technical viability of geosciences processing on the grid by consolidating EGEODE applications and packaging
 Solve complex problems and validate innovative algorithms on real size data sets
2. Validate the economic viability by creating a model for economics suitable for EGEODE Virtual Organization

With added values

- Close the gap between Research and Industrial environment
- Attract and keep the brightest researchers
- Provide a framework for Industry/Research collaboration



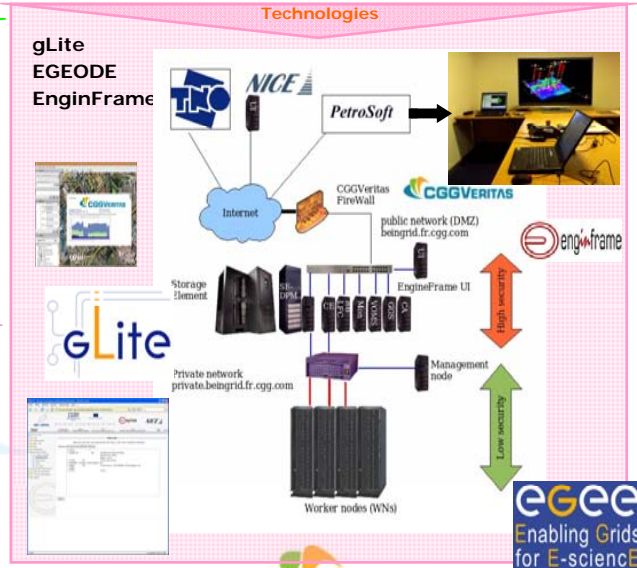
Business Plan

Provide Expanding-GEosciences-On-DEMAND service

Market small O&G structures

Success factors

- Simplified administration and IT resources optimization
- Capacity to meet market shifts and increase business flexibility
- Cost-effective and fast data processing



Conclusion

Subject: Lettre of Reference

This is to confirm that skilled personnel of PETROSOFT Ltd. from the Czech Republic, has carried out reprocessing of older seismic survey around underground gas storage in perfect quality. We also thanks them for help with SW seismic support and for supervising on the other seismic data processing.

We intend to continue this good co-operation in the future and we can sincerely recommend their services to other companies as well.

References

EGEE project: <http://www.eu-egee.org>
 BEInGRID project: <http://www.beingrid.eu>
 DEGREE project: <http://www.eu-degree.eu>
 EGEODE: <http://www.egeeode.org>