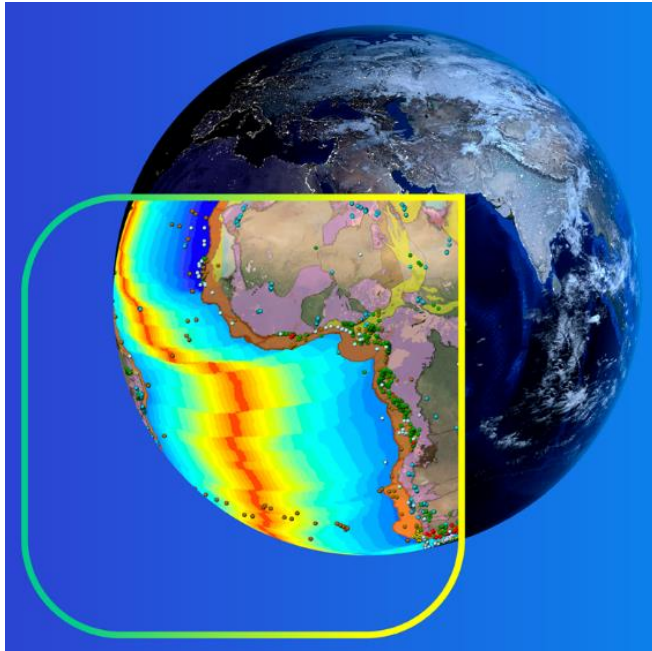# Technologies & Solutions
Providing unique perspectives on our planet

March 2024

CGG

A global technology and HPC leader

SEE THINGS DIFFERENTLY

Providing a comprehensive range of data, products, services and solutions for complex digital, energy transition, natural resource, environmental and infrastructure challenges

INNOVATION

PEOPLE

QUALITY

SOCIAL RESPONSIBILITY

HSE EXCELLENCE

Our values

We are problem solvers
Curious and passionate about constantly advancing science and technology to discover new insights, innovations and solutions for all our stakeholders

We are open
Always inclusive and believing good ideas can come from anyone, anywhere

We are responsible
Caring deeply about the Earth and doing the right thing, always acting safely and with integrity

We are driven to go beyond expectations
Continuously delivering outstanding service for our clients

Our ESG commitments

OUR SUSTAINABILITY CONTRIBUTION

Reducing energy companies' CO_2 footprint: more accurate drilling locations to avoid hazards and optimally target reservoirs

Improving energy companies' internal efficiency: expertise & HPC resources & digital platform to optimize decision process
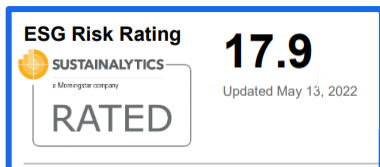
Energy transition: supporting the transition to a lower carbon future

Environmental science: improving awareness of local and global environmental changes

OUR ESG RATINGS

MSCI ESG RATINGS

CCC | B | BB | BBB | A | AA | AAA

RATING ACTION DATE: July 16, 2021
LAST REPORT UPDATE: June 21, 2022

ESG Risk Rating
SUSTAINALYTICS
a Morningstar company
RATED

17.9
Updated May 13, 2022

SILVER
2023
ecovadis
Sustainability Rating

#1-3 in Oilfield Services

#2 in Energy Services

OUR CARBON NEUTRALITY STATEMENT

CGG will achieve net zero by 2050

Aligned with our longstanding commitment to act responsibly and minimize the impact of our activities on the environment, in every sector of our business, we pledge to reach net zero emissions by 2050 in scopes 1 & 2 of the greenhouse gas (GHG) protocol

GHG emissions Scope 1+2 (K tons CO_2 eq)	**2021**: 45 Kt **2022**: 41 Kt **2023**: **24 Kt**	**50% reduction by 2030** 90% by 2050
% Low emissions energy mix (total kwh consumption Scope 2)	**2021**: 36% **2022**: 51% **2023**: **65%**	**50% in 2030** 90% in 2050 *or sooner depending on availability and prices*
Power usage efficiency (3 main centers)	**2021**: 1.35 **2022**: 1.42 **2023**: **1.35**	**<= 1.2 by 2030**

Our leadership

Sophie Zurquiyah
CEO

Peter Whiting
EVP Geoscience

Dechun Lin
EVP Earth Data

Agnès Boudot
EVP HPC and Cloud
Solutions

Jérôme Denigot
EVP Sensing &
Monitoring
and EVP Group HR

Jérôme Serve
Chief Financial Officer

Eduardo Coutinho
EVP Group General
Counsel

Hovey Cox
EVP Marketing &
Sales and
Communications

Emmanuel Odin
Chief Sustainability Officer

Financial overview: 2023 full year
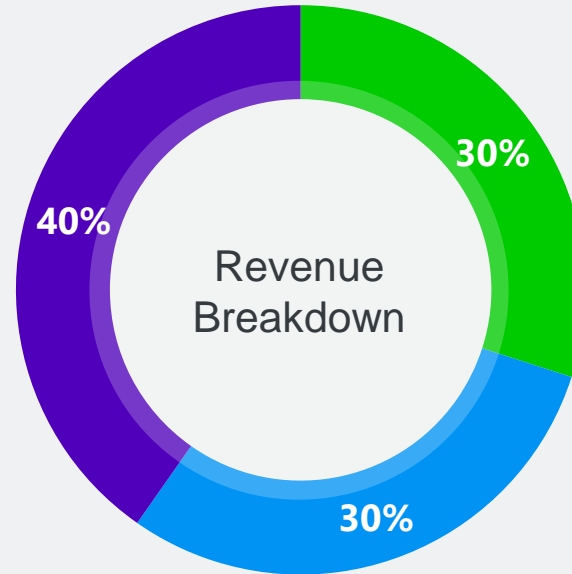
Revenue
$1,125 m
up 21%* Y-o-Y

Adjusted
EBITDAs
$400* m
a 36% margin

Liquidity
$417 m

Revenue Breakdown

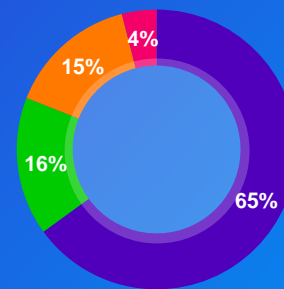Sensing & Monitoring
$453 m

40%

Earth Data
$337 m

30%

Geoscience
$335 m

30%

*Including $(44)m penalty fees from vessel commitments

Global services & expertize

Staff allocation by activity
- ■ Operations
- ■ Support
- ■ R&D
- ■ Sales

4%
15%
16%
65%
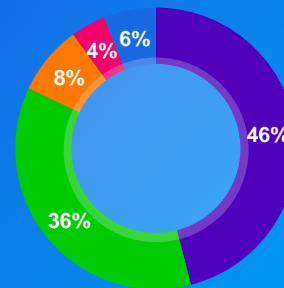
Staff allocation by Division
- ■ Sensing & Mon.
- ■ Geoscience
- ■ HPC & Cloud
- ■ Earth Data
- ■ Support

6%
4%
8%
36%
46%

Geoscience
| 25 Locations Globally
| 70% post graduate degrees
| 27% PhDs

Map locations:
Calgary, Acton, Houston, Villahermosa, Rio de Janeiro, Stavanger, Edinburgh, Oslo, Wales, Netherlands, London, Paris, Nantes, Vienna, Pau, Milan, St Gaudens, Labege, Cairo, Abu Dhabi, Dubai, Muscat, Mumbai, Moscow, Surgut, Xu Shui, Beijing, Kuala Lumpur, Singapore, Brunei, Jakarta, Perth

Legend:
- ● Geoscience center
- ● Sensing & Monitoring
- ● Regional hub

Geoscience global footprint

Map locations:
- Calgary
- Villahermosa
- Houston (Regional hub)
- Rio de Janeiro (Regional hub)
- Wales
- Stavanger x 2
- Oslo
- London (Regional hub)
- Paris (Regional hub)
- Pau
- Milan
- Vienna
- Moscow
- Cairo
- Abu Dhabi
- Muscat
- Mumbai
- Beijing
- Kuala Lumpur x 2
- Singapore (Regional hub)
- Brunei
- Jakarta
- Perth

Legend:
- Services center
- Regional hub

Geoscience Staff allocation

- 51% EHEM Operations
- 20% WHEM Operations
- 12% TECH+
- 8% InCube
- 9% Support

Geoscience

25 Locations Globally
- 16 Subsurface Imaging open centres
- 7 Subsurface Imaging dedicated centres

Technical Staff
- 70% Post graduate degrees
- 27% PhD

A wider scope of business offerings

CORE BUSINESSES

Geoscience
Established leader in subsurface imaging, geology and geoscience services.

Earth Data
The industry's most technically advanced seismic data and geologic studies in the world's key locations.

Sensing & Monitoring
Established leader in marine, land, ocean floor and downhole seismic equipment and gauges.

NEW BUSINESSES

Low Carbon
Supporting industry transition with technology, data and expertise for CCUS, geothermal and critical minerals.

HPC & Digital Solutions
Data transformation, data science, AI, machine learning, HPC expertise & CGG Cloud services.

Infrastructure Monitoring
Structural health and earthworks monitoring solutions with advanced sensors.

Geoscience Ecosystem

Geology
Leading geological and reservoir services for natural resource development

Multiphysics
Expert analysis and interpretation of multi-domain geophysical data for natural resources and environmental applications

Low Carbon
Applying our geoscience and digital expertise to geothermal, CCUS, critical mineral and environmental analysis and monitoring

Earth Observation
Satellite Mapping intelligence from imagery for energy, mining, engineering and environment

Subsurface Imaging
Unmatched expertise, advanced geoscience & digital algorithms and excellent service in every image

Data Transformation
Maximizing the value of data to improve business decisions with expert **Data Hub** transformation services and technology

# Advanced imaging technology for reservoir insight

Driving advances in imaging technology to increase exploration success and reduce drilling risks

- Elastic time-lag FWI and FWI Imaging providing unparalleled results in a range of geological settings

- OBN and hybrid OBN-streamer imaging leadership for the most complex targets
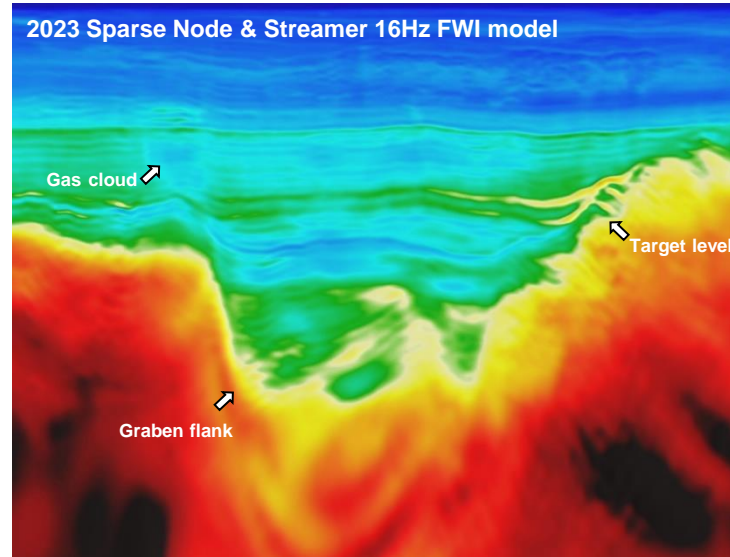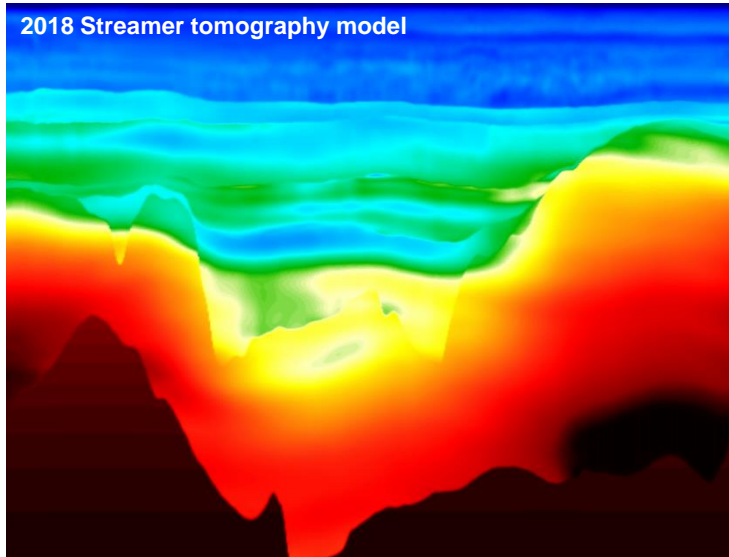
Joint velocity model building with simultaneously acquired sparse node and streamer data, North Viking Graben. CGG Earth Data.
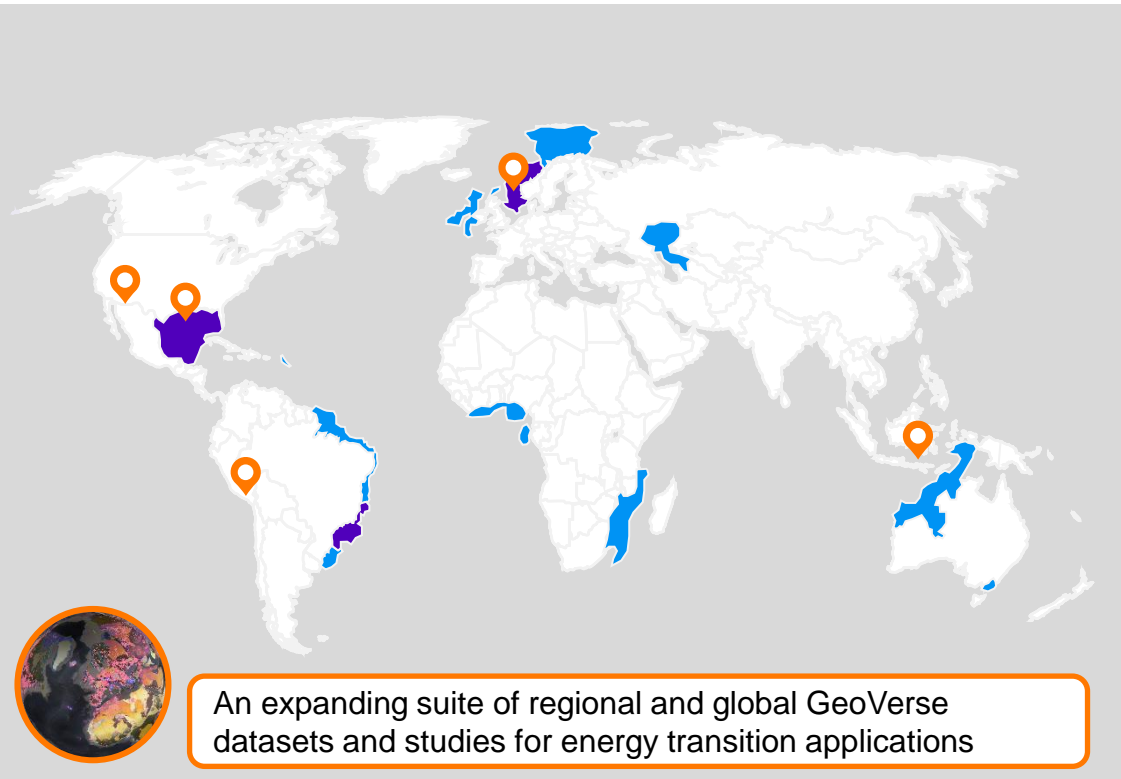
Earth Data
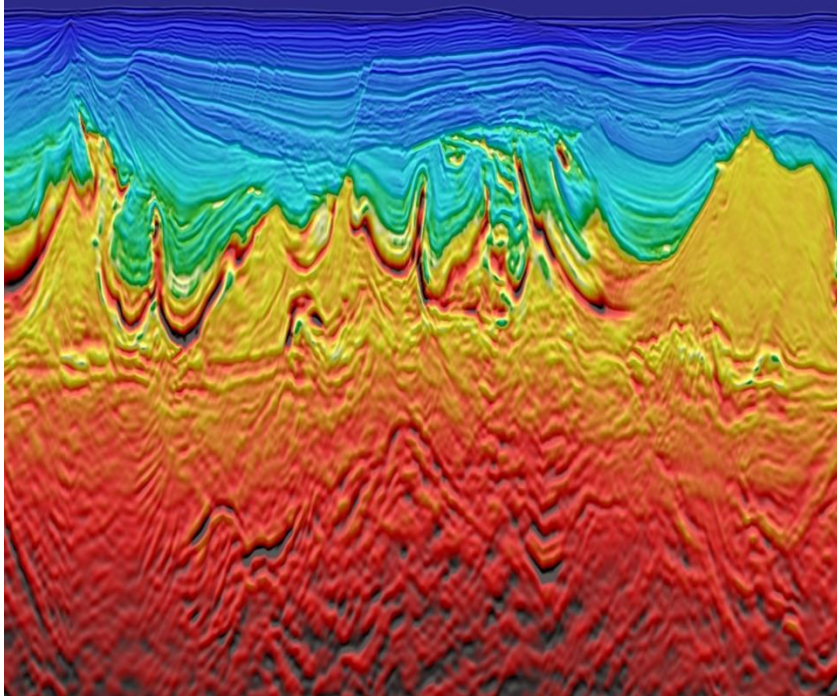
Seismic data reimaged using 30 Hz elastic time-lag full waveform inversion (E-TLFWI), Santos Basin, Brazil. CGG Earth Data.

The most recent and advanced data in the world's key basins and frontiers

- The highest quality seismic data library

- GeoVerse analytics-ready Earth data

- Versal unified seismic data ecosystem

> **The right data, in the right place at the right time**

An evolving Earth Data library

An expanding suite of regional and global GeoVerse datasets and studies for energy transition applications

Core Basins

- Gulf of Mexico, Brazil pre-salt, North Sea
- High-end 3D seismic, OBN and reimaging for near-field exploration, reservoir development and production

Developing

- Southeast Asia, Africa, Equatorial South America and Northwest Europe
- 3D seismic and integrated geoscience studies

Energy Transition & Mining Studies

- CO_2 storage studies, SE Asia, GoM and North Sea
- Southeast Arizona mineral exploration integrated database
- Paleo-salar Lithium study, South America
- Global geothermal resource assessments

Earth Data Library: Supporting industry transition

Applying our expertise to a develop new multi-client products for the energy transition

- **Carbon storage**
  - Applying a unique play-scale screening methodology to identify and de-risk carbon storage potential in the Gulf of Mexico, North Sea and Southeast Asia
- **Mineral exploration data**
  - New multi-client project in SE Arizona to support the mining industry with an integrated ready-to-use, expertly curated dataset
- **Lithium studies**
  - Global Li brine screening study leveraging geochemical data
  - Paleo-salar Li study for South America combining satellite and topographic modelling and ground truthing

GeoVerse Carbon Storage screening study, Southeast Asia

Southeast Arizona mineral exploration multi-client database
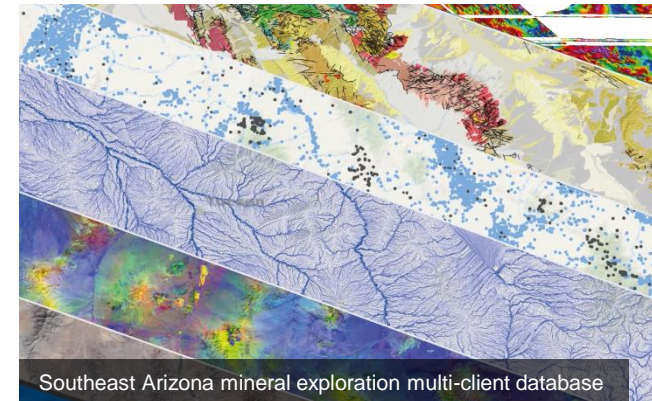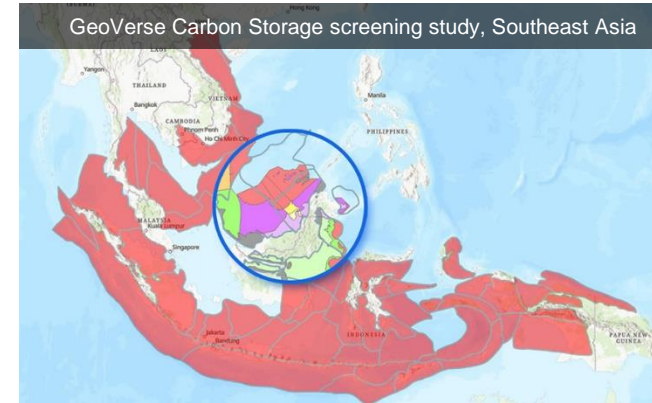
Digital solutions enrich Earth Data offering
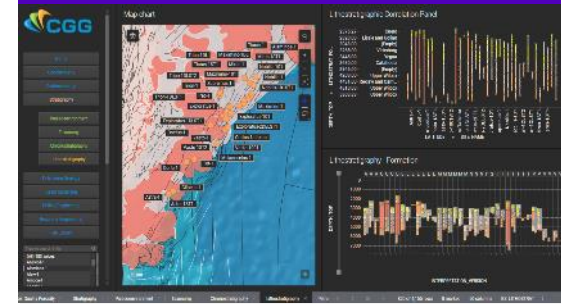
Versal

Unified seismic data ecosystem offering the vast majority of the world's multi-client seismic data
CGG | TGS | PGS | SLB

GeoVerse

A global integrated geological database ready for licensing
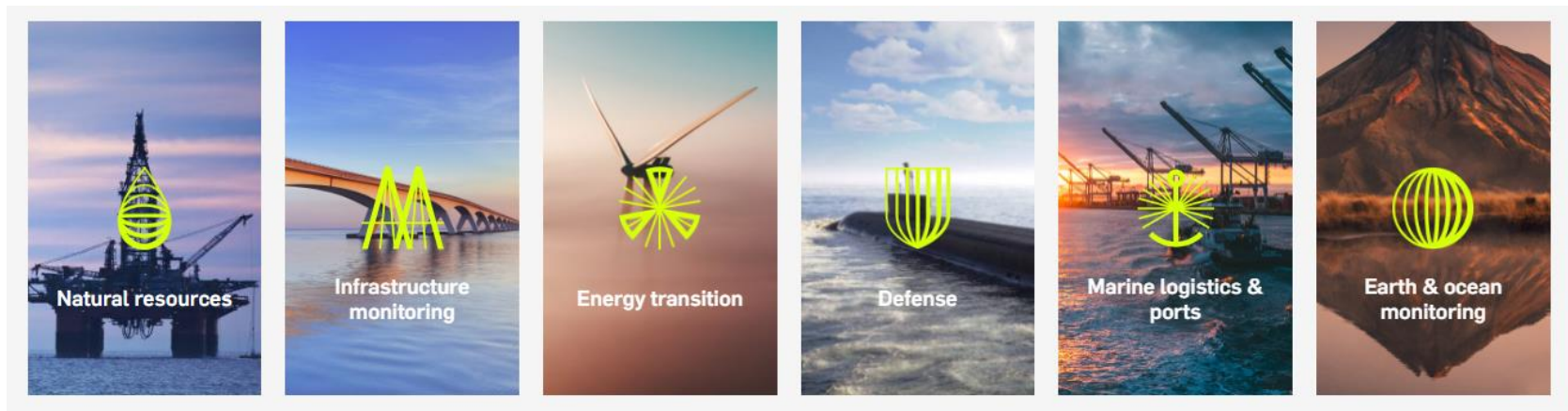
GeoWells

Advanced multi-discipline well data available in GOM (Mexico), Brazil pre-salt basins and Norway

> **BUILDING AN ECOSYSTEM AND GLOBAL DIGITAL DATABASE**
>
> **FOR A NEW GENERATION OF MULTI-CLIENT PRODUCTS AND SERVICES**

Sensing & Monitoring: Our Sercel offerings

Natural resources

Infrastructure monitoring

Energy transition

Defense

Marine logistics & ports

Earth & ocean monitoring

Sercel is the world's leading designer and manufacturer of high-tech solutions for subsurface exploration.

From Earth and infrastructure monitoring, to energy transition, defense, oil and gas, it's in our DNA to adapt to any environment while providing insightful solutions.

THE FUTURE IN FOCUS

Sensing & Monitoring operational highlights

Sercel's TPS in operation in the Gulf of Mexico

Sercel S-scan geotechnical monitoring on a rail track

Land & Marine

- Large deliveries of Nomad90 vibrators and 508XT systems to North Africa and the Middle East
- Announcement of a full range of OBN nodes from shallow water up to 6000 m depth
- Large deliveries of GPR300 Ocean Bottom Nodes (OBN)
- TPS environmentally-friendly broadband source solution deployed in the Gulf of Mexico and Southeast Asia
- Launch of MetaBlue, a Data-driven Marine Seismic Survey Management Solution

New businesses

- Sales of S-scan geotechnical monitoring solution for railway and mining applications in the US, Middle East and Africa

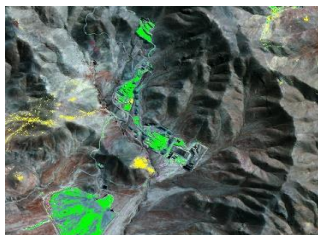# Developing unique offerings to address the critical needs of growing markets

Carbon Storage & Monitoring
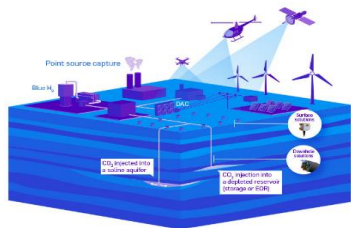
Minerals & Mining

Low Carbon

HPC & Data Transformation

Digital

Structural Health & Earth Works monitoring

Infrastructure

CGG strongly positioned to address critical needs

- Earth intelligence & precise subsurface images

- Data Integration, analytics, ML, AI, LLMs, AI generated insights

- Tailored HPC & digital transformation solutions

- Accurate, reliable & connected IOT sensing & monitoring solutions

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New business key achievements

Digital

- Opening of a new UK HPC center, taking our global compute to 500 PFLOPS
- Launch of innovative Outcome-as-a-Service HPC offering
- HPC contracts in the fields of Generative AI and biotechnology drug design
- Data transformation pilots and full-scale projects with Energy majors

Low Carbon

- Carbon storage projects from prospect characterization to planning for monitoring
- Integrated CCUS data packages in North Sea, US GoM and SE Asia
- First multi-client mining industry project in North America
- Award of contract to evaluate the regional prospectivity of Mongolia for critical minerals

Infrastructure Monitoring

- 3 monitoring projects in France, including a stadium
- Monitoring pilot of a cable-stayed bridge in Houston with Texas DOT
- S-scan earthworks railway monitoring contract in the Middle East

$90m

Revenue from
new businesses
in 2023

HPC and Cloud Solutions

- Providing access to highly-optimized HPC resources and digital platform, and consulting services

- Opening of new UK HPC Hub, taking global compute to 500 PFLOPS

- New Outcome-as-a-Service offering:

  - Delivering customized, capability-focused HPC and AI solutions for scientific and engineering domains

  - Production-based financial model aligned with client's business objectives

London
Paris
Houston
Singapore

3 compute hubs: UK, Houston, Singapore
1 development lab: Massy

UK – new compute hub

Houston

Singapore

Massy

Computer power (PFLOPS)

500

Year	Value
2018	72
2019	166
2020	250
2021	272
2023	500
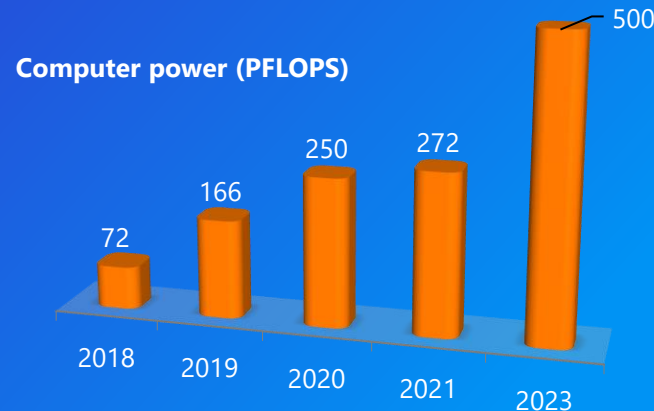
Data Hub expert data transformation services and technology

Team
Subject matter experts
Data scientists and engineers
Machine learning engineers
System developers and
Cloud architects

Technology
Dynamic pipeline of data transformation
and latest-generation
Machine Learning technologies
(driven by HPC and Cloud)
OSDU roadmap

Taxonomy
> 50 years of subsurface knowledge
>700 distinct data types
Millions of processed files
250,000 entities of
subsurface terminology

Digitalization services
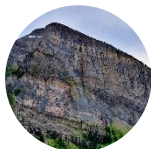
Geoscience Engineering Mining Geothermal Environmental CCUS
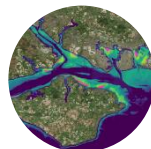
DaaS products built by Data Hub

GeoVerse
global geology
& geoscience

GeoWells
regional data

Carbon Storage and Monitoring

Expertise spanning the Carbon Storage project lifecycle including participation in landmark CCS projects around the world such as Sleipner, In Salah and Gorgon. Leveraging experience across our different disciplines to provide solutions for:
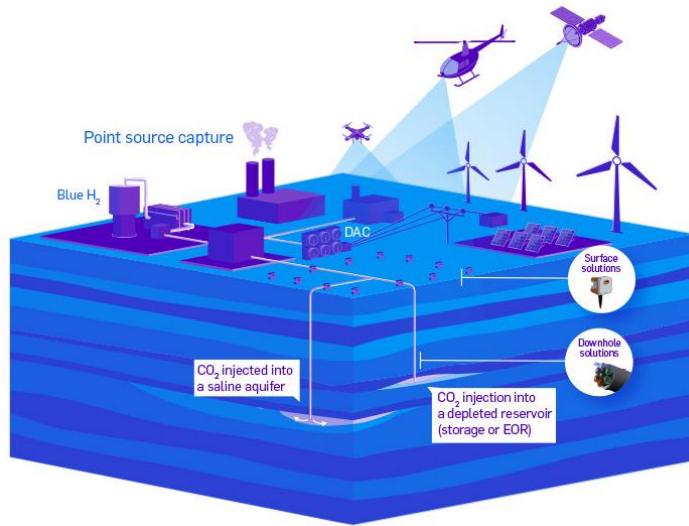
- **Data** – transformation of legacy formats into analytics-ready data
- **Screening** – identification of CO_2 sites for safe, long-term subsurface storage
- **Imaging** – best-in-class seismic imaging for increased subsurface understanding
- **Planning** – diverse geological modeling for optimal seismic aquisition, storage and monitoring strategies
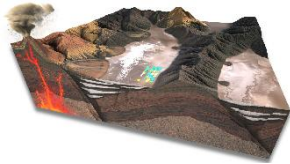- **Monitoring** – tailored, cost-effective monitoring for increased site safety

> **15 years of delivering impactful results in Carbon Storage**
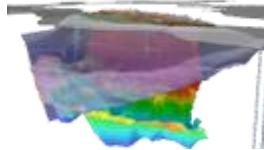
Minerals & Mining

Mineral Exploration Screening

Data-driven regional screening solution for brine, salt and placer hosted minerals essential for the energy transition

Deep Mineral Exploration

Improving deep mineral play imaging efficiency through best-in-class technology applications
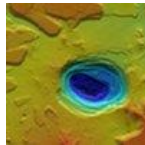

Integrated Mine Imaging

Cross-disciplinary production mapping and modeling ready for advanced analytics and modeling
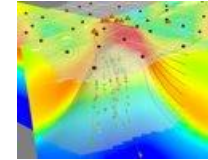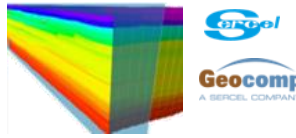

Measure & Monitor

MineScope

Remote, satellite-derived intelligence across mine sites to aid decision-making throughout the mining life cycle
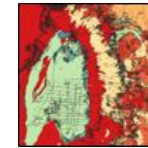

S-Scan for Mining

Complete geophysical solution for monitoring changes in surface and underground structures to anticipate deformation and collapse

RESSolution

Remote environmental & social baseline and monitoring systems driving the responsible management of Natural Capital

> **Leveraging expertise across Equipment, Earth Data and Geoscience**

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Structural health monitoring: Successful bridge test in the US

Market

- Structural health monitoring market estimated ~2B$

- Leveraging high-quality wireless sensors and imaging expertise to deliver solutions for critical infrastructures

Cable-stayed bridge test in Southern US

- Instrumented cable-stayed bridge with S-Lynks sensor solution for a major infrastructure operator

- System measured vibration modes and cables tension, and will allow more relevant and targeted maintenance

THANK YOU

CGG