Technologies & Solutions
Providing unique perspectives on our planet
Providing unique perspectives on our planet

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

SEE THINGS DIFFERENTLY

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

Always act responsibly and abide by all applicable environmental laws

Continue to advance our data collection capabilities to best measure, monitor and continuously reduce our impact

Encourage and support our businesses and employees to take specific actions that support the environment, climate and communities

OUR ESG RATINGS

N°1 ESG Energy Services

Recent MSCI AA rating scoring 76%
A leader in our sector

OUR CARBON NEUTRALITY STATEMENT

We pledge to be carbon neutral by 2050
By lowering our direct emissions (scope 1 & 2) to the lowest practical level and by bridging the gap to zero emission by way of carbon credits only if they are originating from our own activity

| GHG emissions Scope 1+2 (K tons CO₂ eq) | 2020: 53 Kt | 50% reduction by 2030 90% by 2050 |
| % Carbon neutral energy (total kwh consumption Scope 1 & 2) | 2020: 31% | 50% in 2030 90% in 2050 or sooner depending on availability and prices |
| Power Usage Efficiency (3 main centers) | 2020: 1.33 | <= 1.2 by 2030 |

| 2021: 45 Kt | 2021: 36% | 2021: 1.35 |
Our leadership

Sophie Zurquiyah  
CEO

Peter Whiting  
Geoscience

Dechun Lin  
Earth Data

Emmanuelle Dubu  
Sensing & Monitoring

Yuri Baidoukov  
Finance

Eduardo Coutinho  
Group General Counsel

Jerome Denigot  
Human Resources

Hovey Cox  
Marketing, Sales and Communications

Emmanuel Odin  
Health, Safety, Environment Sustainable Development
Financial overview: 2021 full year

Revenue
$941 m
Stable Y-O-Y

EBITDAs
$344 m
a 36% margin

Liquidity
$419 m
+$19 m cash flow*

Revenue Breakdown
- Sensing & Monitoring $357 m
- Earth Data $276 m
- Geoscience $309 m
Global services & expertise

70% post graduate degrees
26% PhDs

Geoscience
25 Locations Globally

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

Staff allocation by Division
- Sensing & Monitoring
- Geoscience
- Earth Data
- Support
Geoscience Global Footprint

- 25 Locations Globally
  - 16 Subsurface Imaging open centres
  - 7 Subsurface Imaging dedicated centres
- 70% post graduate degrees
- 26% PhDs
OUR STRENGTHS

Remarkable data & technology
Unique Earth Data library, imaging, geoscience & digital technologies

Outstanding people & performance
Ingenuity, diversity and expertise driving innovation and exceeding expectations

Exceptional ESG commitments
Enabling CGG and our clients to be more efficient, effective, responsible and sustainable

THREE 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

Our perimeter
Investing in growth opportunities

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NEW APPLICATIONS

**Earth Data Library**
Growing portfolio of digital products for natural resource and energy transition activities, backed by a unique taxonomy and data ecosystem

**Energy Transition**
Supporting industry transition with technology, data and expertise for CCS, geothermal and critical minerals

**Monitoring & Observation**
Structural health & earthworks monitoring solutions with advanced sensors and Earth observation and Environmental Sciences expertise

**Digital Sciences**
Data transformation, data science, AI, machine learning, CGG Cloud services and HPC expertise
Our Geoscience ecosystem

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

- **Geology & Engineering**: Leading geological and reservoir services and consultancy for natural resource development.
- **Multiphysics**: Expert analysis and interpretation of multi-domain geophysical data for natural resources and environmental applications.

- **Energy Transition**: Applying our geoscience and digital expertise to Geothermal, CCUS, Critical Mineral and Environmental analysis & monitoring.
- **Earth Observation**: Intelligence from imagery for Energy, Mining, Engineering, Environment and Defense.

- **Digital Sciences**: Bespoke HPC & Cloud services, data transformation, machine learning and AI.
- **GeoTraining**: Bringing together the full breadth of CGG’s capabilities to provide comprehensive learning path programs.
More accurate FWI algorithm key to improved subsalt images

- Leap from acoustic to elastic FWI with more accurate physics in the algorithm
- Deployed successfully in several production projects

Enhanced Subsalt Reservoir Image
- Elastic FWI Image provides subsalt images of higher S/N and better continuity
- Previous poorly imaged reservoirs are now rendered more clearly

Herschel OBN, Gulf of Mexico
CGG Earth Data
Our digital services & expertise

**Data Transformation**
Expert Data Hub data transformation, classification and integration for analytics and interpretation

**Machine & Deep Learning**
Core AI Lab expertise for ML/DL applications across geoscience, Earth observation, environmental science and data transformation

**HPC Services**
Access to highly-optimized HPC resource & digital platform, and consulting services

**Cloud Services**
Secure and efficient access to our exceptional HPC resources for geoscience and beyond with CGG Cloud

› TAKING DATA FURTHER
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

TLFWI reimaging highlights pre-salt reservoirs, Santos Basin, Brazil

CGG Earth Data
An evolving suite of seismic and Earth Data products

Core Basins
- Gulf of Mexico, Brazil pre-salt, Onshore US, North Sea
- High-end 3D, OBN and reimagining for near-field exploration, reservoir development & production

Developing
- Australia, Africa, Equatorial Brazil, North West Europe & Barents Sea
- 3D and integrated geoscience studies

Energy Transition Studies
- Global Geothermal Resource Assessment
- Carbon Storage Screening, North Sea
- Paleo-salar Lithium study, South America

An expanding suite of regional and global GeoVerse Energy Transition resource studies
Worldwide footprint in proven and mature basins

1.3 million km²

Leading coverage Brazil pre-salt with new acquisition

Reimaging projects in Gulf of Mexico generating new interest

Extensive contiguous datasets in North Sea featuring new OBN and dual azimuth coverage

Renewed interest in US Land and new high-quality datasets

GEOLOGY & SATELLITE
500 Geologic Studies
1,000 Petroleum system analyses Global hydrocarbon seep database

GEOSPEC - LEGACY SEISMIC
695,767 km² 3D worldwide
4,490,237 km 2D worldwide
Digital solutions enrich Earth Data offering

**Versal**
Unified seismic data ecosystem offering 70% of the world’s multi-client seismic data
CGG | TGS | PGS

**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 & SERVICES
Sercel designs and manufactures high-tech solutions for subsurface exploration. Capitalizing on its world-leading position in the seismic acquisition industry, Sercel also provides innovative solutions for structural & earthworks monitoring, defense and energy transition.

- Full range of onshore, offshore & downhole products
- Industry benchmark and market leader
- Unequalled product reliability & customer support

IMAGING THE DEPTHS
A diversified Sercel scope

Oil & Gas
Seismic solutions for imaging and monitoring the subsurface and production monitoring gauges

Energy Transition
Seismic solutions for subsurface imaging and monitoring of geothermal, CCS, critical minerals and offshore wind

Structural Monitoring
Sensors and monitoring solutions for infrastructure

Earth Monitoring
Microseismic earthquake monitoring solutions

Defense
Custom-engineered marine acoustics and cable solutions
Sensing & Monitoring operational highlights

**Land**
- Strong activity in North Africa
- Delivery of over 25 vibrators in various geographies
- New deliveries of WiNG QuietSeis-based wireless node

**Marine**
- Completed delivery of the major GPR300 order
- Launched Bluepulse, the marine source solution for sensitive areas

**Downhole tools**
- Memory gauges activity growth year-on-year

**Infrastructure Monitoring**
- New SHM pilot projects on several structures in the USA

Sercel announced the launch of Bluepulse at the EAGE convention in Amsterdam
New differentiated offerings in rapidly growing markets

**DIGITAL SCIENCES**

- **Digital Services & Innovation**
  Cloud and HPC services enabling efficient access to compute power and analysis tools leveraging data science.

- **Data Transformation**
  Advanced systems for data digitalization, transformation, classification and integration for analytics and interpretation.

**MONITORING & OBSERVATION**

- **Environmental Sciences**
  Monitoring of local and global environmental changes using geoscience data, technology and analytics.

- **Infrastructure Monitoring**
  Detailed and continuous situational awareness to predict failures, respond to hazards and optimize preventative maintenance of structures & earthworks.

**ENERGY TRANSITION**

- **Geothermal**
  Evaluation of resource potential, optimization and monitoring of geothermal developments with greater subsurface insight.

- **Minerals & Mining**
  Services for exploration and monitoring of mine tailings, increasing awareness at all stages of the cycle.

- **CCUS & Energy Storage**
  Expertise for screening, evaluating and monitoring sub-surface storage and risks

**EARTH DATA**

- **Multi-Client Earth Data Library**
  Portfolio of digital products for natural resource and energy transition applications, with over 55 petabytes of data, backed by a unique taxonomy and data ecosystem.
Leading specialized HPC services & storage
Providing clients with access to CGG HPC resources / data in a secure, efficient and cost effective way

A highly optimized HPC & digital platform
Managing very large and complex datasets
Supporting algorithms requiring significant resources
Constantly leveraging new technologies

Market and Business models
$1.6B accessible market in 2025
Long-term services contracts delivering custom HPC capacity and optimization support
Data Transformation: Data Hub

**Team**
- Subject matter experts
- Data scientists and engineers
- Machine learning engineers
- Cloud architects

**Technology**
- Classification and Extraction
- Transformation and Integration
- Powered by machine learning, HPC, Microsoft Azure

**Taxonomy**
- 50 years of subsurface knowledge
- 250,000 entries
- Millions of processed files

**Digitalisation Services**
- Geoscience Engineering
- Mining Geothermal
- Environmental Other industries

**DaaS Products**
- *GeoVerse™*
  - Global geology & geoscience
- *GeoWells*
  - Regional detail
Geothermal

- **Independent** guidance to assess geothermal projects at a range of scales
- Exploring the ‘Geothermal Value Chain’
- Evaluating the *scale* of global geothermal energy potential and providing insight for electrical power and heating
- Leveraging CGG experience and advanced *data analytics* in sedimentary basins and volcanic regions
- Dedicated *multi-disciplinary* team to guide and advise on global to prospect investment de-risking

Supporting the transition to a lower carbon future
Minerals & Mining

**Mineral Exploration**
Predict, target and estimate mineral resource in different environments and at increasing depth

**Production & Closure**
Baseline and monitor mine site & tailings activity, performance, safety and risk

**Strategic intelligence**
Provision of unique third party intelligence for exploration, mine site activity, environmental risk management and insurance

**Data Management & Analysis**
Enabling better management and analytics of data

Leveraging expertise across Equipment, Multi-Client & Geoscience
Critical insight for mine waste management

- Aging tailings storage facilities (TSFs) represent an ongoing liability for mine operators
- Recent high-profile failures and new global regulations emphasize the need for TSF monitoring
- Landmark project for a global mining company using airborne electromagnetic 3D imaging over 45 TSFs in Brazil
- Significant global potential for TSF monitoring services, with other pilot projects underway using a variety of integrated techniques

TailingsPulse™ service launched Nov 2021
Expertise across storage and monitoring having participated in landmark CCS projects around the world including Sleipner, Troll, Weyburn, Pembina and Gorgon

Leveraging the experience across our different disciplines:

- Geology
- Reservoir Development
- Earth Observation
- Multiphysics imaging
- Seismic imaging and interpretation
- 4D seismic monitoring
- Instrumentation

15 years CCS experience and leader in modeling & monitoring
Environmental Sciences

Nature-based Solutions
Identification, optimisation & subsequent monitoring of nature-based carbon offset

Marine resources
Integration of environmental & geotechnical data to reduce risk

ESG
Monitoring the impact of infrastructure or specific human activity on the environment

Leveraging CGG’s HPC & AI lab capabilities and earth science expertise to provide data analytics-driven intelligence to mitigate environmental risks
Expanding Environmental Sciences portfolio

Microplastic pollution monitoring

- Survey for Snowdonia National Park Authority analyzed and characterized microplastic pollution
- Our Geoscience NRSA Labs developed new techniques to prepare and analyze samples
- Study created new opportunities to provide advanced environmental monitoring

SeaScope: clean sea monitoring

- Sea surface slick intelligence to strengthen situational awareness and mitigate risk
- Deliver value to environmental, operations, crisis response, legal and corporate teams
- Detection and classification of marine and coastal pollution using our unique satellite, ML and data expertise
Infrastructure Monitoring: Structural Health & Earthworks

- Solutions for monitoring critical infrastructure, earthworks and near-surface conditions
- Providing detailed and continuous situational awareness to respond to hazards and optimize preventative maintenance
- Advanced ultra-sensitive QuietSeis™ MEMS and DAS sensor technology
- Patented passive seismic imaging technology maps near-surface anomalies and changes
- Industry leading Earth observation data provision and interpretation
- Autonomous systems with minimal footprint with no impact on operations
- Real-time cloud delivery of results and analysis
Earth Data Platform and Services

**Data as a Service**
DaaS Portal with interactive applications for clients to access and use CGG Earth Data

**Versal**
Unified seismic data ecosystem offering 70% of the world’s multi-client seismic data
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**Management & Analytics**
Simplified management, hosting and streaming of CGG and client data, plus analytics layer

Data ecosystem enabling access, visualization, procurement, management, and data mining
A growing and diverse Earth Data Library

- Applying our expertise to 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

- Geothermal Resources
  - A new benchmark for global resource assessment

- Lithium brines
  - A global screening study leveraging geochemical data

- Palaeo-salars and Lithium
  - A unique study for South America combining satellite and topographic modelling and ground truthing
THANK YOU