DELCIVERING GEOSCIENCE LEADERSHIP
People, data & technology delivering geoscience leadership

Providing a comprehensive range of **technology, data, services and equipment** that supports the discovery and responsible management of the Earth’s natural resources

Northern Viking Graben, Norwegian North Sea
CGG Multi-Client
Our leadership

Sophie Zurquiyah  
CEO

Colin Murdoch  
Geoscience

Dechun Lin  
Multi-Client

Emmanuelle Dubu  
Acquisition & Equipment

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 • 2019 full year

- **Revenue**: c.1.4 B$
- **EBITDAS**: c.$700m
- **Net Debt**: At c. 0.6 B$

**Revenue Per Business**
- Geoscience: 41%
- Equipment: 32%
- Multi-client: 27%
Global footprint

- 28 Subsurface Imaging Centers
- 65% post graduate degrees
- 25% PhDs
Our perimeter

OUR STRENGTHS

Exceptional People
Breadth and depth of expertise driving innovation and providing outstanding service

Leveraging Data
Maximizing the value of data through our expertise and technologies

Remarkable Technology
Leading the industry in advanced imaging and geoscience & digital technologies

THREE CORE BUSINESSES

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

Multi-client
The industry’s most technically advanced seismic data and geologic studies in the world’s key locations

Equipment
Established leader in marine, land, ocean floor and downhole seismic equipment and gauges
CGG expertise and technology, helping our clients

Accelerate exploration & de-risk drilling

Leverage data and technology for deeper insight and efficiency

Increase reserves, optimize production and boost quick returns

Faster, better-informed decisions that increase success rates & reduce costs and risks across the E&P cycle
Our Geoscience ecosystem

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

**Geological & Reservoir Services**
Integrated reservoir characterization technology & services

**GeoSoftware**
Leaders in reservoir characterization software technology for a powerful advantage

**GeoTraining**
Bringing together the full breadth of CGG’s capabilities to provide comprehensive learning path programs

**Satellite Mapping**
Intelligence from imagery for E&P, engineering and beyond

**Smart Data Solutions**
Digital transformation and data management solutions

**Leadership across geosciences for enhanced insight & understanding**
Leveraging data analytics, machine learning and AI
Multi-Client Data

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

- The highest quality seismic data library
- Well and geologic data, leading studies
- JumpStart integrated geoscience products
- GeoSpec enhanced legacy data

The right data, in the right place at the right time
Products supporting our clients’ key areas of focus

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

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

- **Frontier**
  - Select global frontier basins
  - 2D, 3D and geologic studies to support exploration & new ventures
A worldwide footprint in key locations

> 1.2 million km²

Leading coverage of Central and Western Gulf of Mexico & Brazil

Extensive contiguous reimaged datasets in the UK and Norwegian North Sea

New premium-quality acquisition in Australia, Brazil, North Sea and onshore US

Key, high-quality surveys and data in select frontier and developing basins

Our Multi-Client products feature the most advanced imaging technology
Clear leadership with a broad & unique portfolio of leading edge technology

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

SERCEL - AHEAD OF THE CURVE™
A complete portfolio of equipment

**LAND & TZ**
- Nodal and cable acquisition systems & related QC
- Geophones / hydrophones
- Vibrators

**OBN**
- Nodal and cable acquisition systems & related QC
- Marine sources
- Underwater Acoustics

**MARINE**
- Acquisition systems & related QC
- Marine sources
- Underwater acoustics
- Navigation software

**DOWNHOLE**
- Acquisition systems & related QC
- Downhole gauges
- HPHT tools
Our digital offerings

Data Transformation
DataHub - Digitalization, transformation, repair, analysis, and formatting

Internet of Things
Integration of digital capabilities into our acquisition systems

Machine & Deep Learning
Supervised and unsupervised facies classification & reservoir characterization

Data Management & Access
Certified storage and secure entitled access/delivery of licensed data via the cloud. Next generation CDR/NDR solutions.

Cloud Services
Exceptional High Performance Computing for geosciences

Platform Support
Cloud & petro-technical platform agnostic, Python ML ecosystem, OSDU support

TAKING DATA FURTHER
Our business values

- We employ and develop exceptional people
- We take pride in our work and deliver outstanding service to our clients
- We partner with clients and communities to ensure the best outcomes for all involved
- We seek challenges and are inspired by those we face each day
- Health, safety, security, environment and social responsibility are embedded in our management system
Our ESG strategy

The health of the environment and climate is critical to the well-being of people and communities globally.

To best protect the environment, climate and the communities where we operate, CGG:

- **Always act responsibly** and abide by all applicable environmental laws.
- **Continue to advance our technology and services** to enable our clients to sustainably and responsibly discover, develop and manage the Earth’s natural resources.
- **Continue to advance our data collection capabilities** to best measure, monitor and continuously reduce our impact.
- **Commit to improving our power usage efficiency**, increasing the low-carbon content of our energy supply, and reducing our GHG emissions.
- **Encourage and support our businesses**, all employees and locations globally to find and take specific actions that support the health of the environment, climate and the communities where we operate.
Our ESG business solutions

Environmental monitoring

**Offshore pollution monitoring**
Satellite imagery, machine learning and interpretation to enhance awareness and understanding of pollution incidents

**Marine mammal monitoring**
Fully-integrated, passive acoustic monitoring to detect marine mammals for environmentally responsible operations

**Minerals and Mining**
Mapping, auditing and monitoring of mine infrastructure, production and tailings to reduce operational risk

Transition to Low Carbon

**Clients’ emission reduction support**
Reducing the impact of E&P with advanced seismic. CGG Cloud has been on a green tariff for 8 years in the UK

**Geothermal Sciences**
Multi-disciplinary team with combined experience of >130 projects globally. Leveraging sedimentary basin expertise and digital technologies for new insights

**Carbon Capture & Monitoring**
Technology and expertise to help identify, characterize and de-risk storage sites and monitor CCUS projects
Porosity prediction using multi-linear regression

Building on our geoscience technology
- Imaging algorithms and processing software
- High performance computing (HPC)
- Reservoir characterization software technology
- R&D integrated into operations

Harnessing digital technologies
- Digital transformation and delivering data into our clients’ systems
- Increasing the quality of our products and services
- Advanced value-add analytic, Machine/Deep Learning and AI technology

A continuous pipeline of new equipment
- Advanced prototyping & manufacturing

Committed to innovation
- Approximately 14% of our workforce focused on R&D
- Approximately 9% of our annual revenue re-invested

Porosity prediction using DNN: more detail and better well ties

Increasing prediction accuracy with machine learning
HampsonRussell Emerge uses deep neural networks to provide better quantitative reservoir characterization results

CGG GeoSoftware
Computing power for data-driven algorithms

Increasing accuracy & decreasing cycle-time

Interpretation driven  Data & algorithm driven

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PFLOP

TLFWi model