



International
Association
of Oil & Gas
Producers

An introduction to IOGP

Prepared for: GEOPOS

F. AUGER

24 Mars 2022



About IOGP



We are the global voice of our industry



We bring the industry together



We drive good practices



We serve stakeholders around the globe as go-to experts

We speak on behalf of a global membership

IOGP has 80 Members (as of February 2022)

Members – Upstream Companies















Members – National and Other Associations



Associate Members



IOGP Governance and Committee Structure

 <p>Fawaz Bitar Senior Vice President Health, Safety, Environment & Carbon</p> <p><i>Chair</i></p>	 <p>Kim McHugh Vice President, Wells</p> <p><i>Vice-Chair</i></p>	 <p>Trond-Erik Johansen Executive Vice President of Health, Safety and Environment</p>	 <p>Roberto Dall'Omo Head of HSEQ Natural Resources</p>
 <p>Morten Loktu Senior Vice President, COO organization</p>	 <p>John Whelan Vice President, Global Heavy Oil, ExxonMobil Upstream</p>	 <p>Graham Henley Senior Vice President Engineering & Projects Capability</p> <p><i>Vice-Chair</i></p>	 <p>Troels Albrechtsen Senior Vice President HSE Exploration & Production</p>
 <p>John McDonald Chief Executive Officer</p> <p><i>Associate Member</i></p>	 <p>Mohamed Firouz Asnan Senior Vice President, Malaysia Petroleum Management</p> <p><i>Designated Member</i></p>	 <p>Khalid Y. Al-Qahtani Chief Engineer</p> <p><i>Designated Member</i></p>	 <p>Iman Hill Executive Director</p>

How we work – Directorship



Iman Hill
Executive Director



--- Proposed Standing Committees as of October 2021

Global voice of our industry

- Oil and gas continue to play a significant role to meet global energy demand and as feedstock for the industry
- IOGP aims to enhance the understanding of the contribution oil and gas make as well as the critical role the oil and gas industry plays in the energy transitions to a lower carbon energy future
- We speak on behalf of a global membership

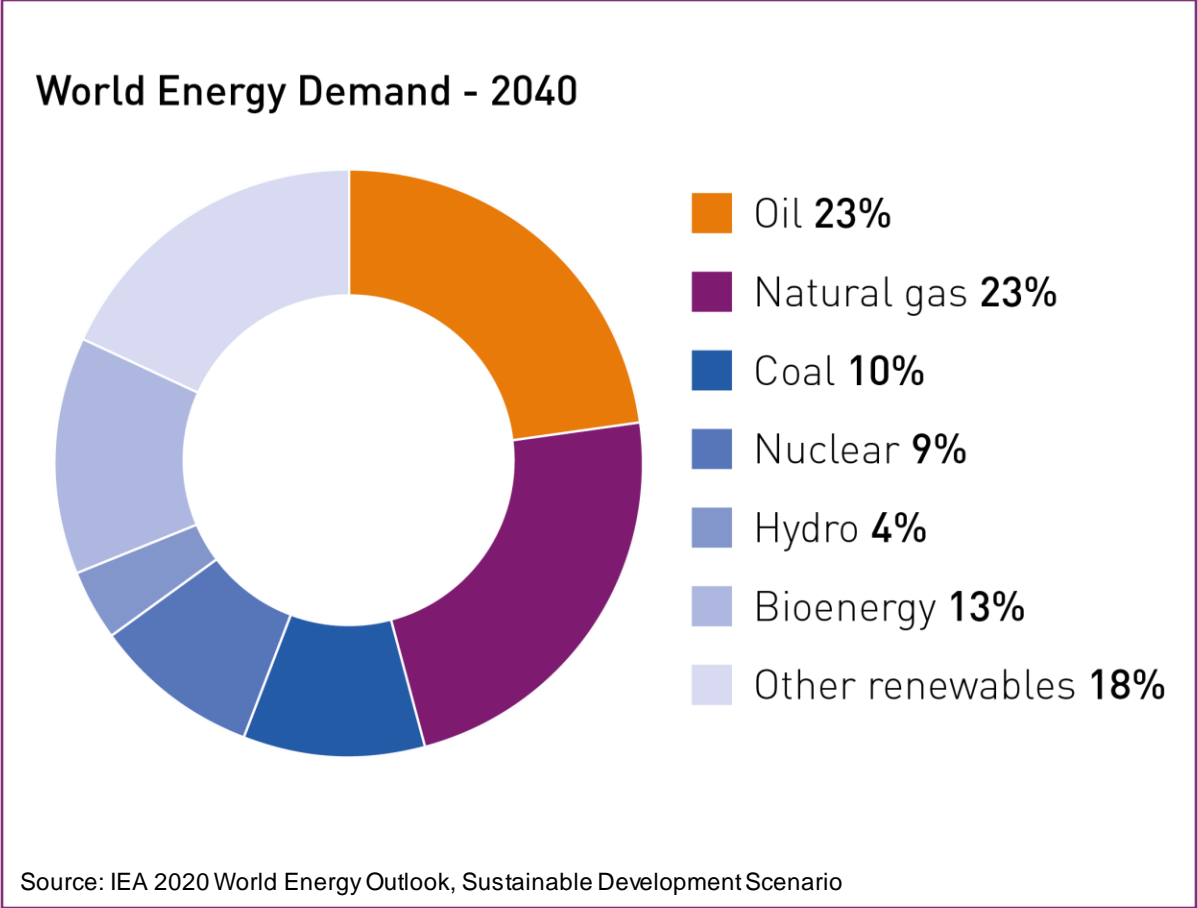


We are the global
voice of our
industry

Oil and gas remain the backbone of energy supply

46%

of global energy demand will still be met by oil and gas



Oil and gas industry contributing to a low carbon future

How the oil and gas industry contributes to a low carbon future

There is no single pathway to a low carbon future.


The oil and gas industry contributes in many ways to achieve the goals of the Paris Agreement.



**REDUCE EMISSIONS
IN OPERATIONS**



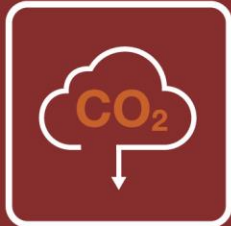
**REDUCE
FLARING**



**COAL TO
GAS SWITCH**



**INVESTMENT IN
RENEWABLES**



**CARBON CAPTURE,
(UTILIZATION) AND STORAGE**



**CLEAN
HYDROGEN**

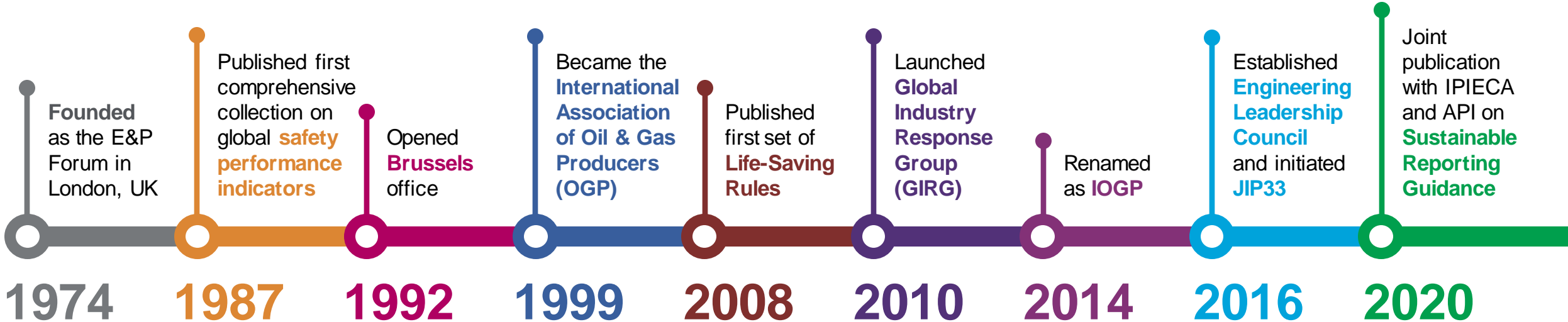
We bring the industry together

- For over 45 years we have been serving the upstream industry as a unique forum to share know-how and good practices in the areas of safety, health, environment and climate.
- As a member driven, non-profit organization we work with over ~1,900 experts from our Member organizations in 11 committees and ~80 subgroups to drive good practices.



We bring
the industry
together

A unique forum for the upstream industry since 1974



How we work – Joint Industry Projects

Directorate	JIP No.	Joint Industry Project (JIPs)	URL	Key contact
Engineering and Standards	JIP30	Offshore Structures Standards CLOSING DOWN	www.iogp.org/jip30	Adri Postema
	JIP33	Standardization of Equipment Specifications for Procurement Phase IV	www.iogp.org/jip33	
	JIP35	Offshore Structural Specifications CLOSING DOWN	www.iogp.org/jip35	
	JIP36	Capital Facilities Information Handover Specification	www.iogp.org/jip36	
	JIP39	Normally Unattended Facilities	www.iogp.org/jip39	
Environment	JIP22	E&P Sound & Marine Life Phase III E&P Sound & Marine Life Phase IV	www.iogp.org/jip22	Harvey Johnstone
	JIP34	Environment Genomics	www.iogp.org/jip34	
Europe	JIP38	Hydrogen for Europe CLOSING DOWN	www.iogp.org/jip38	François-Régis Mouton
Safety	JIP37	Aviation Safety Focus Areas	www.iogp.org/jip37	Olav Skår

We drive good practice

- Our work is supported by sound science and data. We have, among others, the largest industry safety data base.
- We publish up to 40 guiding documents per year.
- Our publications are freely available on our Publications Library.
- Most popular publications:
 - Life Saving Rules
 - Safety Performance Indicators
 - Environmental Performance Indicators



We drive good
practices

We drive good practice – for a safer industry

- IOGP has a long history of working to improve safety in the industry, from guidance on management systems, to the specifics for safe diving operations.
- “Project Safira” brings together four of IOGP’s safety projects:
 - Process Safety
 - Aviation
 - Land Transportation
 - Life-Saving Rules
- So far IOGP has published over 100 safety guidance documents.



We drive good practice – for a low carbon future

- The oil and gas industry contributes to a low carbon future in various ways. IOGP supports its members in these efforts.
- IOGP welcomes the Paris Agreement and supports the international community's commitment to address the global challenge of climate change.
- Examples of how we support our members:
 - Working with OGCI and IPIECA on Recommended Practices for Methane Emissions Detection.
 - Completion of Flaring Management Guideline with the World Bank's Global Gas Flaring Reduction (GGFR) Partnership.
 - Supporting organization to the Methane Guiding Principles.
 - Carbon Capture Utilization and Storage (CCUS)
 - Clean hydrogen

CCS – The Potential



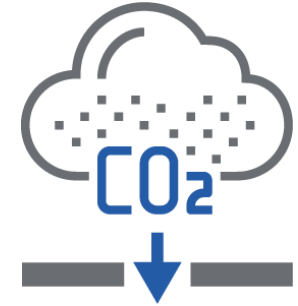
Emission cuts in **industrial processes** where mitigation potential is high, like steel, cement/lime, chemicals, and refining



Low-carbon, flexible **electricity from gas-fired power plants with CCS** to complement an energy system with a growing share of variable renewables



Large-scale production of **hydrogen from natural gas with CCS**, providing clean energy for industry, power, transport and heating



Removal of CO_2 from the atmosphere by combining **CCS with bioenergy (BECCS)**, using **direct air capture (DAC)**, or through **nature based solutions**

Hydrogen – The Potential



In the **power sector**, low-carbon hydrogen from natural gas can support the sector's transition towards net-zero emissions



Low-carbon hydrogen can be used as feedstock in the **chemical industry** and it can replace coal in the **cement and steel industries**



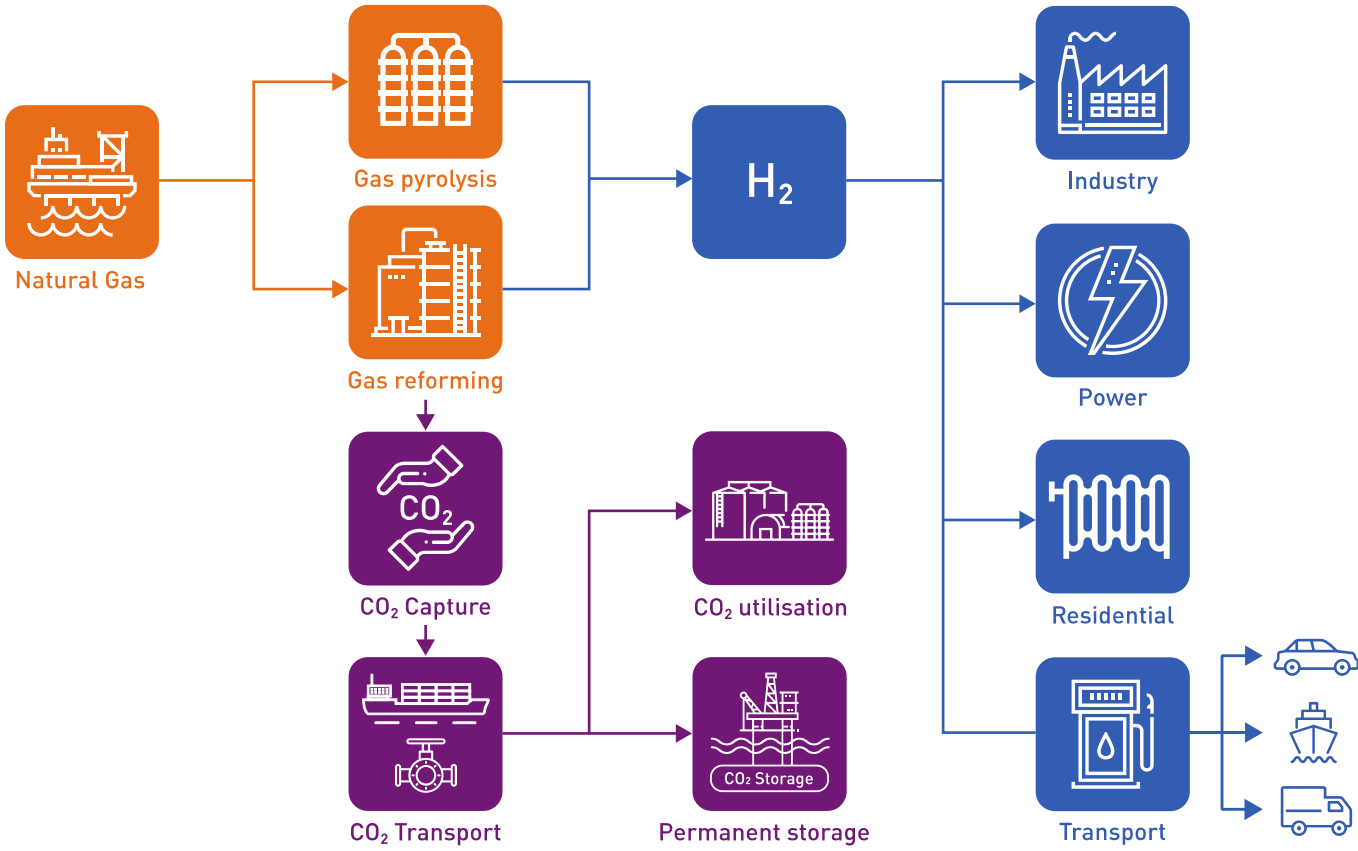
The gas grid can be adapted to carry low-carbon hydrogen, decarbonising the **heating** of residential and commercial sectors



Volumes of low-carbon hydrogen from natural gas can allow for its wide-spread use in **heavy and long-haul land and maritime transport**

Clean Hydrogen – Value Chain Options

Hydrogen and CCUS value chain options



We serve stakeholders around the globe

- From our headquarters in London, we address a variety of global and regional bodies including UN agencies, the World Bank, the ISO, the International Regulators' Forum, OSPAR and others.
- Our Brussels office provides an essential conduit for advocacy and debate between our industry and the European Union and its policymakers.
- We also have a crucial presence in Houston to liaise with authorities, regulators, industry associations, Members and future Members.

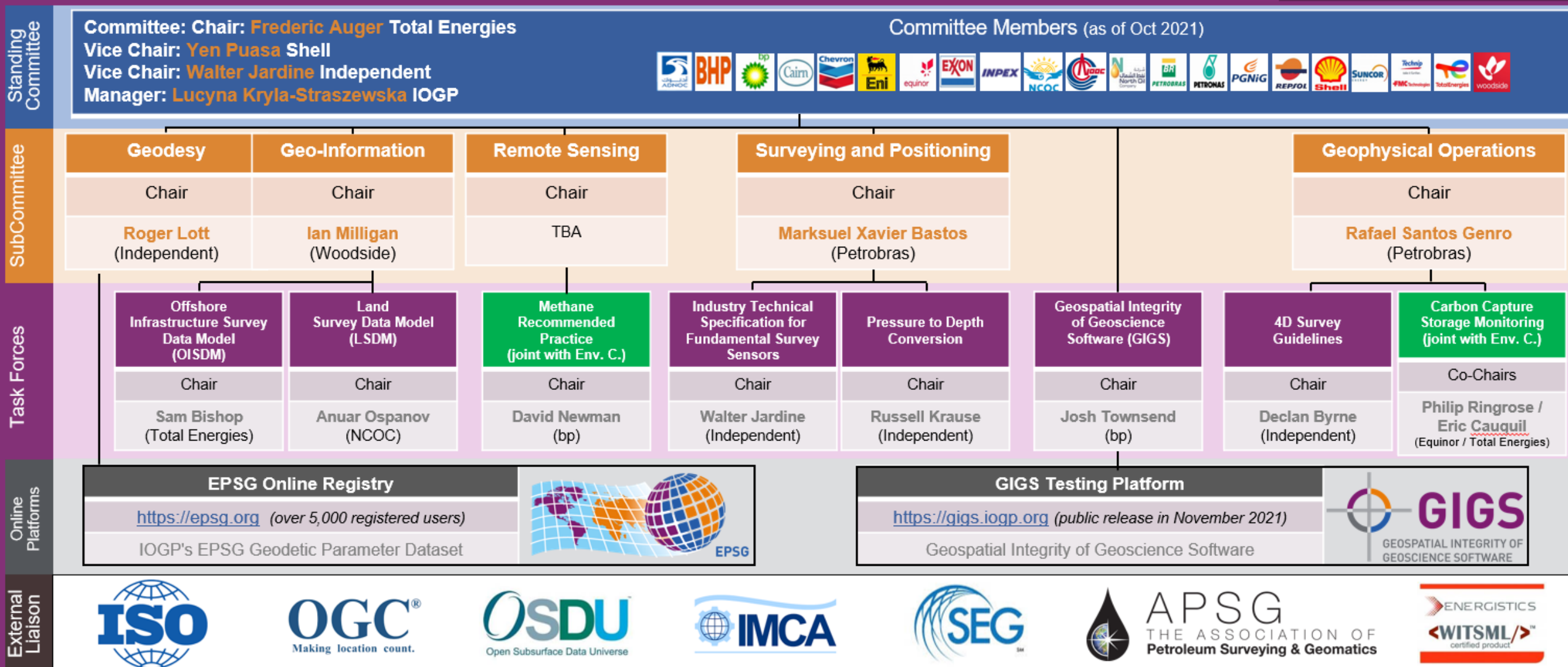


We serve
stakeholders
around the globe
as go-to experts

Geomatics Committee – structure and activities

EGM2021

17th-18th November



Membership (as of 27 Oct 2021)

BHP, Lovely, Narmina

[bp](#), [Byrne](#), [Piers](#)

[Chevron](#), [Ficocelli](#), [Chad](#)

Equinor, Ekrheim, Åsmund Olav

ESRI, Davis, Matthew

[ExxonMobil](#), [Dasun](#), [Fairy](#)

ExxonMobil, Monkman, John

IOGP, Kryla-Straszewska, Lucyna

NCOC (North Caspian Operating Co.), Ospanov, Anuar

Petrobras, Cardeles, Luigi

Petrobras, Lemos de Oliveira, Luiz Claudio

Petrobras, Martini, Luisnei

PETRONAS, Mustafa, Saiful Nizam

[PTTEP](#), [Boonyasaknanon](#), [Phathompat](#)

[PTTEP](#), [Wong-anatachai](#), [Akaruchai](#)

Shell, Hulshof, Bart

[TechnipFMC](#), [Matthews](#), [Dave](#)

TotalEnergies, Bard-Maier, Sylvain

TotalEnergies, Vidal, Arnaud

²¹Woodside, Milligan, Ian

Subcommittee Membership

Unchanged since last meeting

- Ian Dootson bp (US)
- Matt Garratt bp (EU)
- Bert Kampes vice-chair Shell (US)
- Luiz Lemos de Oliveira Petrobras (RoW)
- (alternate) Luigi Castro Petrobras
- Lodois de Marolles TotalEnergies (EU)
- Francesco Pellegrini ENI (EU)
- Greg Pilgrim ExxonMobil (US)
- Geir Simensen Equinor (EU)
- (alternate) Branka Barisic Equinor
- Phil Summerfield vice-chair ExxonMobil (US)
- Tham Siew Kee Petronas (RoW)
- Lee Woolhouse Woodside (RoW)
- Jin Zhu Chevron (US)
- Melita Kennedy ESRI (US)
- Roger Lott chair IOGP (consultant) (EU)
- Nils Lundström Geomatic Solutions (EU)
- Victor Minor Blue Marble (US)
- Paul Nolan RPS / Cairn (EU)
- Pawel Zaradkiewicz (independent) (EU)

Subcommittee Meetings

- Monthly videoconference calls
 - 1.5 – 2 hours
- Supplemented by wg meetings
- Dataset change request dialogue with correspondents and data QC done outside meetings

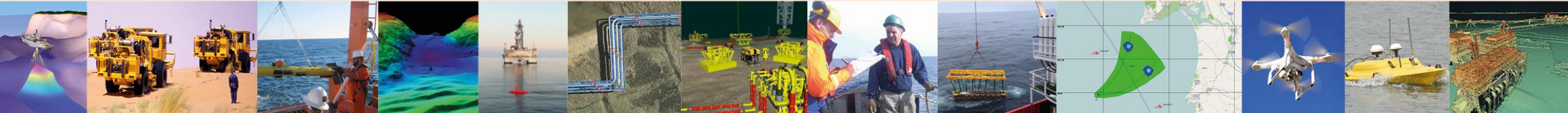
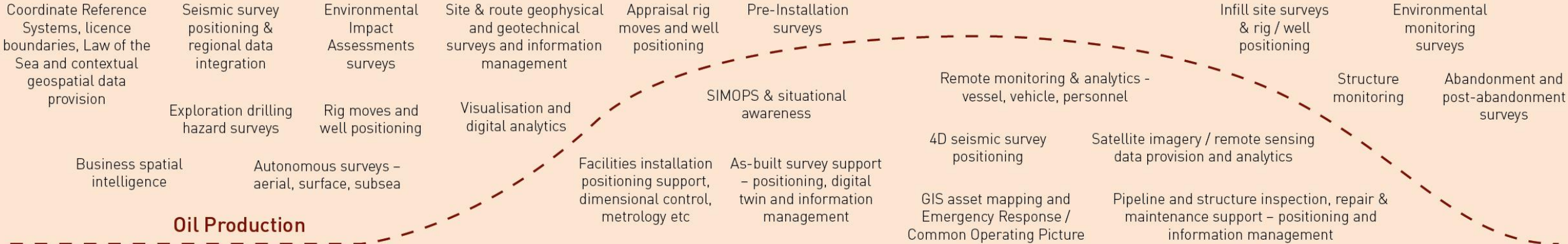
BP	Wade	McGee	Primary	wade.mcgee@bp.com
Chevron	Bill	Gilmour	Primary	bill.gilmour@chevron.com
Chevron	Damian	Ling		Damian.Ling@chevron.com
Equinor	Tom	Glancy	Primary	togla@equinor.com
ExxonMobil	Russell	Krause	Primary	russell.a.krause@exxonmobil.com
ExxonMobil	T Greg	Pilgrim	Alternate	greg.pilgrim@exxonmobil.com
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Tullow Oil	Declan	Byrne	Primary	declan.byrne@tulloil.com
Woodside	Karl	Perry	Primary	karl.perry@woodside.com.au

The Geomatics Committee – objectives and activities

Geomatics support during the upstream oil and gas life cycle

Access → Exploration & Appraisal → Development → Production → Retirement

SURVEY AND POSITION INTEGRITY AND GEOSPATIAL DATA MANAGEMENT ACROSS THE FULL FIELD LIFE CYCLE



The Geomatics Committee – objectives and activities

Providing global guidance. Publish & maintain:

- EPSG Geodetic Parameter Dataset – the de-facto global standard for CRS and geodetic parameters
- Surveying and Positioning & Geodesy guidance notes
- Industry standard position data exchange formats – P1, P2, P6, P7
- GIS data models – SSDM, LSDM, OISDM
- Geospatial Integrity of Geoscience Software, test guidance and data (GIGS)

Liaison with industry standards organisations: IMCA, SEG, ISO, APSG, OGC, Energistics, CAPP

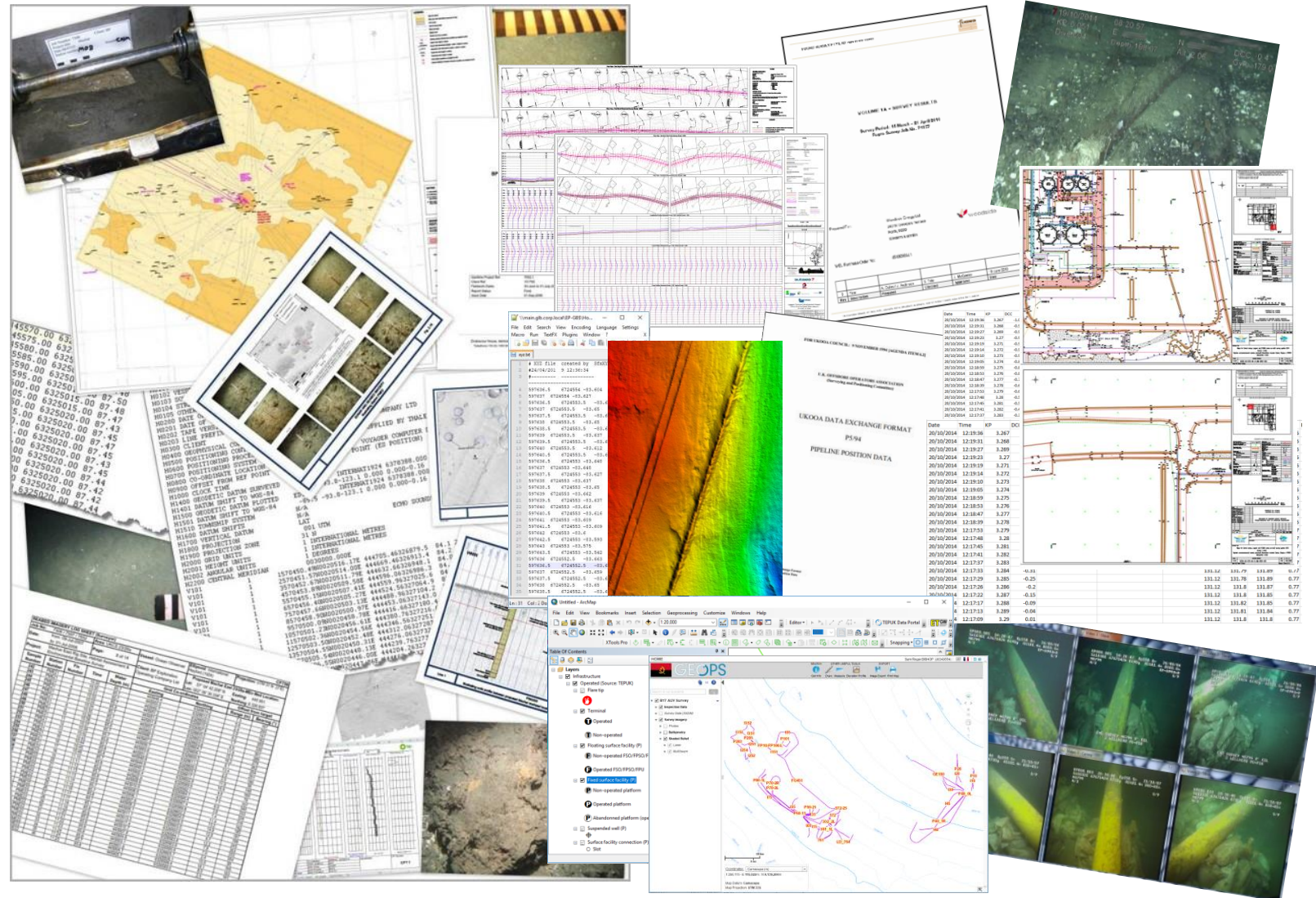
Advocacy with Regulators, Data Repositories

Forum for exchange of experience and knowledge:

- Biannual committee meetings
- Annual Geomatics Industry Days
- Active 5 Subcommittees in addition to various number of Task Forces and Working Groups
- Initialisation and support of industry initiatives – e.g. IOGP / IPIECA
Oil Spill Response (Common Operating Picture - COP), OGEO Portal

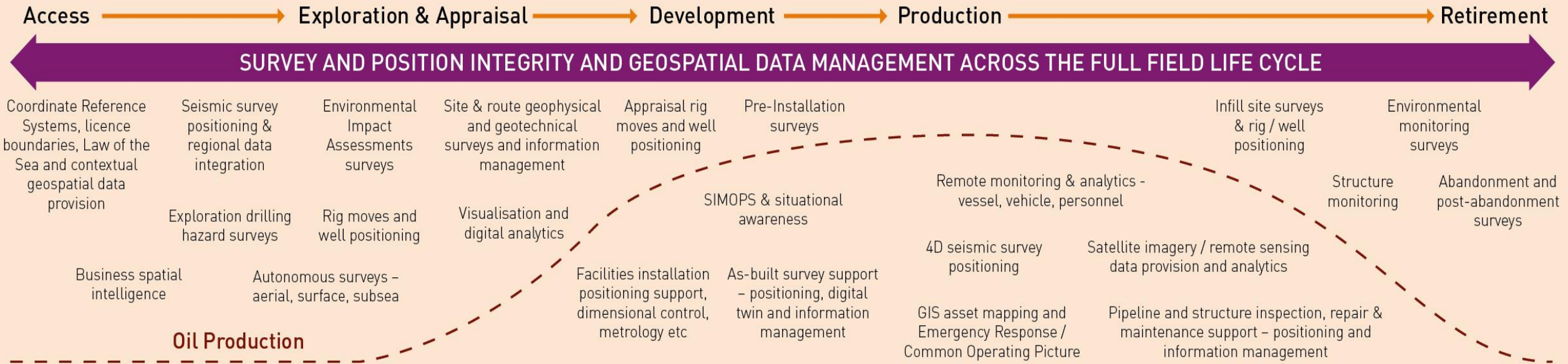
Traditional data deliverables

- No format consistency between contractors & operators
- No consistency between different surveys
- Data needs converting to a common format
- Varying nomenclature, cartography & symbology
- Difficult to automate QC, loading, integration & exchange
- Multiple handoffs & slow turnaround



Geomatics – where do standards & data models apply?

Geomatics support during the upstream oil and gas life cycle

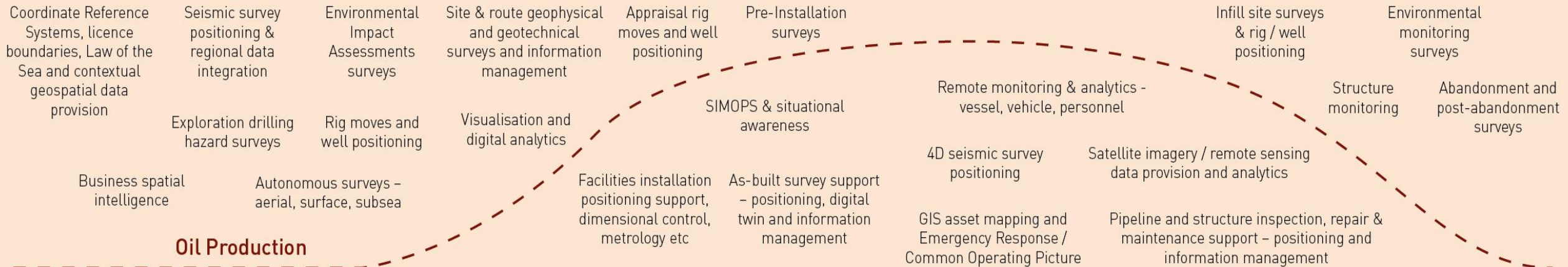


Geomatics – where do standards & data models apply?

EPSG & GIGS

SSDM	Px/11	SSDM	SSDM	P7/17	OISDM	Px/11	LSDM	P7/17	SSDM	SSDM
LSDM	P7/17	USBL	LSDM	USBL	USBL	OISDM	USBL	LSDM	OISDM	USBL

SURVEY AND POSITION INTEGRITY AND GEOSPATIAL DATA MANAGEMENT ACROSS THE FULL FIELD LIFE CYCLE



Geomatics Committee is influencing global standards

- Geodesy SubC. is an active member of ISO Technical Committee 211: Geographic Information/Geomatics.



- Revision of ISO 19111 – led by IOGP Geodesy SubC.

An abstract data model for coordinate reference system definition, including recommended terminology.



- Development of ISO 19162 – led by IOGP Geodesy SubC.

Well-known text (WKT) representation of coordinate reference systems (implementation of 19111).
Replaces a myriad of proprietary efforts that have caused huge problems in E&P spatial data management.



- ISO 19115, Metadata – Energy Industry Profile dev. led by IOGP members

19115-1 amendment #2 – to support datasets referenced by dynamic CRSs – led by IOGP Geodesy SubC.

- Seabed Survey Data Model (SSDM)

Adopted as Community Standard by OGC (Open Geospatial Consortium). Used by some national nautical charting agencies and IHO (International Hydrographic Organisation).



- IOGP Positioning Formats (P1/11, P2/11, P6/11, P7/17)

Seismic Position Data Format incorporated into SEG (Society of Exploration Geophysicists) standards.
Wellbore Position Data Format incorporated into Energistics WITSML.



Advocacy: Angola Transformation

- Angola Regulator intimated intention to alter required transformation from WGS 84 to Local Datum
- IOGP work group investigated transformation and found it was >80 feet different from two main transformations agreed with Regulator & Operators (1990s)
- A series of meetings held with Regulator. Agreement made not to enforce new transformation for Angola offshore blocks
- Likely saving of \$Millions in Data Management project (re-transformation), across multiple affected Operators, not to mention potential HSE risk

Leading role in modern geodesy: Dynamic CRS

- Using the GPS coordinate reference system WGS 84 may only be done at high accuracy (better than 2-3 metres) after applying corrections that are usually not made in projects
- Geomatics explains the issue in simple terms. An example included - pre-fabricated platform bridge did not fit between a new and an old platform due to difference in age between GPS coordinates of the platforms. Project costs of \$Millions incurred through installation and production delays
- ISO TC211 have requested that we present the video and the issues it addresses to their plenary next month

Available at: <https://www.iogp.org/geomatics/>

or via <https://www.youtube.com/watch?v=ygDv2PJPYoc&list=PLt0-qTVCvEp1ZwKnf8iup320Cvp9AgXso&index=1>

International Association of Oil & Gas Producers
NOV 2017

IOGP's Geomatics Committee advocacy on geodesy for offshore Angola

IOGP's Geomatics Committee provides global guidance for the survey & positioning and geospatial data management disciplines.

The use of a new set of transformation parameters between the GPS satellite navigation system (WGS 84) and the national Coordinate Reference System (Camsucpa) was recommended by the Regulator and it's National mapping Agency (IGCA) for use in offshore Angola.

The Geomatics Committee Geodesy Subcommittee specialists compared the new transformation with existing transformations options for the area and the results are shown in the Figure below. The dots represent the relative location of points after the transformation has been applied, and the circles represent the estimated transformation accuracy. The IGCA transformation (black dot) falls well outside existing transformation results and is offset from the two transformations used by O&G deepwater Operators by approximately 25 metres (EPSG codes 1327 and 1324 - red & blue dots).

The Geodesy Subcommittee concluded that the new transformation would cause significant problems for the offshore industry. On that basis, IOGP's Geomatics Committee expressed IOGP members concerns on the matter to the Angolan Regulator.

Adopting the new transformation would have the practical effect of causing all new spatially referenced data to be offset from all pre-existing spatially referenced data. To rectify this, existing data would have to be re-transformed, "moving" it by circa 25 metres (80 feet). Approximately 80% of O&G data is spatially referenced, including licence, well (tophole & trajectory), seismic, infrastructure & facility location, geohazard, bathymetry data etc, so this would be a major exercise and could introduce significant risks to operations and subsurface data integrity.

Given that there has been consistency in transformations applied in offshore Angola licence blocks for almost 20 years, to which all archive data is currently referenced, there was also no business justification for making a change from existing practice.

This major advocacy work helped to avoid estimated \$Millions of data re-processing costs. This is an excellent example of a successful joint effort of Operators, pursued on behalf of the Association for the advantage to our membership.

The Geomatics Committee would like to acknowledge Sonangol assistance in addressing the issue with Angolan mapping authorities.

Camsucpa to WGS 84 Datum Transformations

Registered Office: City Tower, 40 Basinghall Street, 14th Floor, London, EC2N 5SE, United Kingdom T +44 (0)20 3763 9700 F +44 (0)20 3763 9701
Brussels Office: 88 de Soverein/V&E, 4th Floor, B-1140 Brussels, Belgium T +32 (0)2 544 9150 F +32 (0)2 544 9159
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secretariat@iogp.org
www.iogp.org

YouTube

Search

Geodesy on the move

Introducing dynamic coordinate reference systems

Introduction to geomatics
IOGP - International Association of Oil and Gas Producers - 1/10

- 1 Intro Plate tectonics
IOGP - International Association of Oil an...
- 2 Coordinate change
IOGP - International Association of Oil an...
- 3 Coordinate epoch
IOGP - International Association of Oil an...
- 4 User accuracy
IOGP - International Association of Oil an...
- 5 Geomatic calculations
IOGP - International Association of Oil an...
- 6 Bridge construction
IOGP - International Association of Oil an...
- 7 Transformations
IOGP - International Association of Oil an...
- 8 Point Motion Operations
IOGP - International Association of Oil an...
- 9 Periodic update
IOGP - International Association of Oil an...
- 10 Avoid a car crash
IOGP - International Association of Oil an...

Standardisation: SSDM, EPSG dataset and common industry technical specifications

EGM2021
17th-18th November

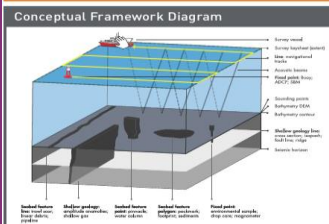
SSDM (Seabed Survey Data Model): adopted by the intergovernmental IHO

reduces costs, improves risk management and data integration

Industry standard for the transfer, storage and management of seabed survey data

- Platform and Drilling Hazard Surveys
- Sweep Debris Surveys
- Environmental Surveys
- Bathymetric Surveys
- Geotechnical
- Pipeline Route Surveys
- Pipeline Pre-lay Surveys
- Maintenance Surveillance (using geophysical-based 'survey' systems, not video-based 'inspection' systems)

Adopted by
O&G Operators: internal data standard
Survey Contractors: survey data delivery standard



- Key updates in V2**
- UML design of the model in Enterprise Architect for both ArcGIS implementation and GML encoding
 - Compliance with EPSG Coordinate Reference System schema and consistency with other IOGP Standards
 - Centralized reference for units of measure
 - Expanded definition of seabed and subsurface features
 - Complete Symbology stylesheet for SSDM Features (incl. CAD Stylesheet)
 - Integration of environmental/benthic and geotechnical surveys
 - Considerations for long-term sustainability and maintenance of the SSDM schema

Consistent Query and Presentation

GeoRepository

Home | EPSG Dataset | GeoRepository | About Us | Contact

Full Data Search: WGS 84 GO

Map Search: SEARCH

Login Register

Search Database

Search Results for 'WGS 84' (1851 Objects Found)

CRSs (536) | Conversions (6) | Transformations (1293) | Datums (16) | More...

NAME	CODE	TYPE	AREA	DATA SOURCE	REMARKS	REVISION DATE
Camacura 1948 / TM 12 SE	22052	projected	Angola - Angola proper - offsh...	IOGP	Used for exploration and produ...	September 17, 2019
EGM2008 height	3855	vertical	World	IOGP	Zero-height surface resultin...	July 17, 2019
EGM84 height	5798	vertical	World	IOGP	Zero-height surface resultin...	July 17, 2019
EGM96 height	5773	vertical	World	IOGP	Zero-height surface resultin...	July 17, 2019
GDA84 / CKIG84	6721	projected	Christmas Island - onshore	IOGP	Usage restricted to areas belo...	March 19, 2017
GDA84 / CKIG84	6723	projected	Cocos (Keeling) Islands - onsh...	IOGP	Replaces WGS 84 / CKIG82 (CRS...	March 19, 2017
GDA84 / Geoscience Australia Lambert	3112	projected	Australia - onshore	IOGP	See also WGS 84 / ACRESLC (CRS...	September 29, 2016
Hong Kong Geodetic CS	8425	geocentric	China - Hong Kong	IOGP	Locally sometimes referred to...	February 15, 2018
Hong Kong Geodetic CS	8426	geographic 3D	China - Hong Kong	IOGP	Locally sometimes referred to...	February 8, 2018
Hong Kong Geodetic CS	8427	geographic 2D	China - Hong Kong	IOGP	Locally sometimes referred to...	February 8, 2018

Items per page: 10

EPSG Dataset: de facto global standard for defining Coordinate Reference Systems

supports accurate spatial data activity across many E&P applications, covering the full field life cycle
supports national data repositories and regulatory agencies worldwide for > 6,500 CRSs

Operational efficiency: Technical Specification for USBL

common, simpler USBL calibration & verification process - reducing carbon and improving operational efficiency
adopted by all major Operators



Driving data management accuracy and efficiency: Geospatial data integrity – GIGS

EGM2021
17th-18th November

Commitment to GIGS compliance requirement from Open Subsurface Data Universe – OSDU.

GIGS provides a comprehensive tool to evaluate geospatial data integrity and quality in geoscience applications and data.



GIGS
GEOSPATIAL INTEGRITY OF
GEOSCIENCE SOFTWARE
Managed by IOGP's Geomatics Committee

TRUST
YOUR
**SPATIAL
DATA**

An industry leading digital testing framework to evaluate application capability in establishing and maintaining geospatial integrity and data quality

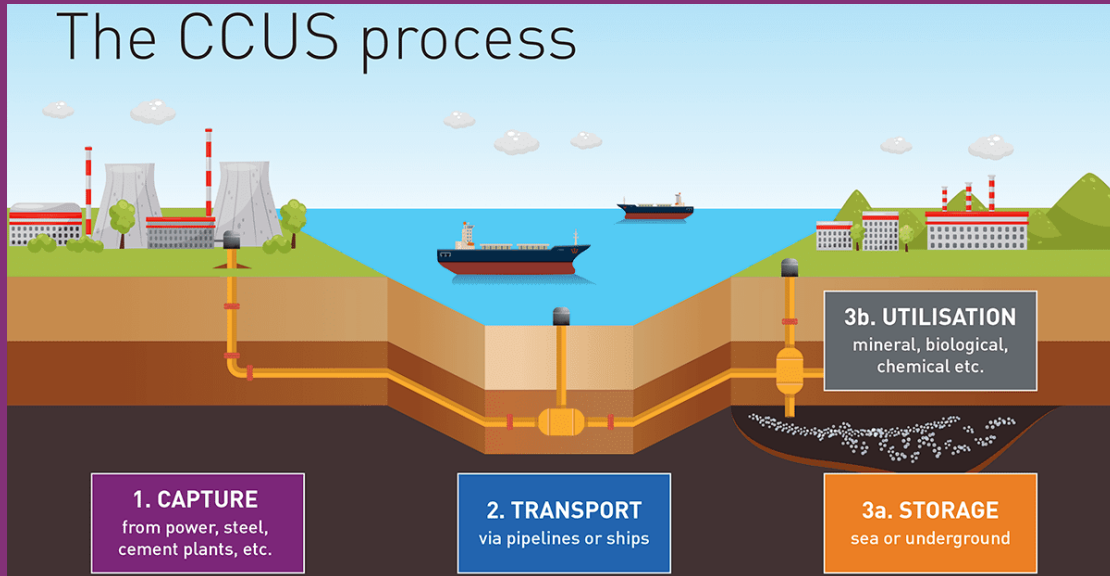


Geomatics for a low carbon future

An industry guideline for seabed and overburden integrity monitoring for marine CCS projects

will allow Operators to build technical specifications for near surface site characterization / baseline activities, and risk-based monitoring of CO₂ storage

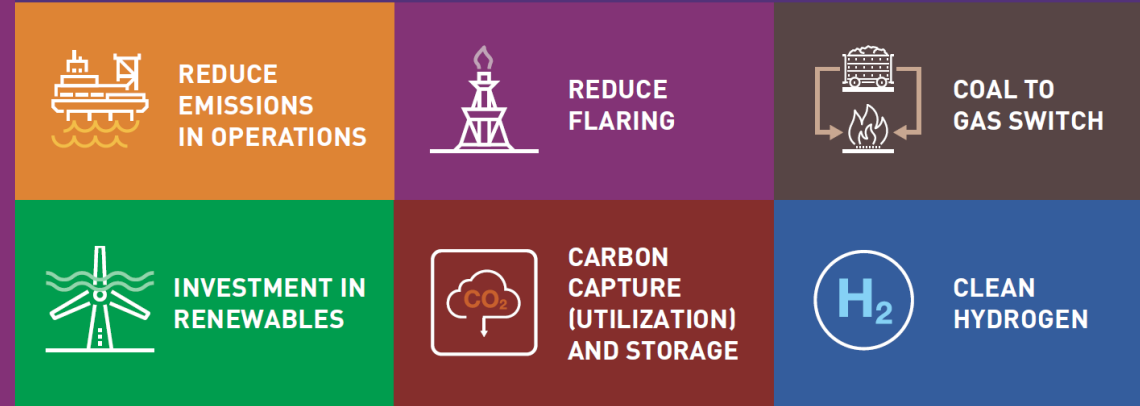
<https://www.oilandgaseurope.org/issues/carbon-capture-use-storage>



How the oil and gas industry contributes to a low carbon future

There is no single pathway to a low carbon future.

The oil and gas industry contributes in many ways to achieving the goals of the Paris Agreement.



<https://www.iogp.org/blog/news/how-iogp-is-delivering-a-low-carbon-future>

Methane Detection Recommended Practices

led by IOGP, in collaboration with OGCI and IPIECA

will allow Operators to better understand how to apply detection technology combinations to improve the robustness of methane emission detection, more effective mitigation actions

<https://www.oilandgaseurope.org/issues/methane-emissions>



International
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For more information please contact:

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Experience and knowledge exchange: 10th Geomatics Industry Day, 7-8 December 2021

EGM2021
17th-18th November

Programme and registration: <https://www.iogp.org/event/10th-geomatics-industry-day>



Geomatics in a low carbon future:
emerging technologies for deepwater
survey and geospatial operations

IOGP / Petrobras 10th Geomatics Industry Day

7-8 December 2021 (online event)

Knowledge sharing Geomatics Industry Days were held over the last 10 years across the world, typically attended by 100+ participants, where Geodesy, Geospatial, Survey & Positioning topics are aired and shared.

2021 IOGP Industry Day will focus on a low carbon future. Geomatics has a strong part to play in this arena, including:

- Minimally-crewed and uncrewed survey operations
- Remotely-managed and autonomous survey vessel operations
- Advanced geospatial technology, spatial data integration and visualization
- Crisis Management through Common Operating Picture and geospatial analytics
- Environmental baseline and monitoring surveys
- Renewables survey support – site & route survey, installation support
- Methane emission surveying and mapping
- Carbon Capture & Storage support (e.g. overburden monitoring)