



# First Quarter 2017 Results

Earnings Presentation



## Cautionary Statement

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- This presentation contains forward looking information
- Forward looking information is based on management assumptions and analyses
- Actual experience may differ, and those differences may be material
- Forward looking information is subject to significant uncertainties and risks as they relate to events and/or circumstances in the future
- This presentation must be read in conjunction with the press release for the first quarter 2017 results and the disclosures therein

# Slow Start to 2017

## Significant Order Book Increase

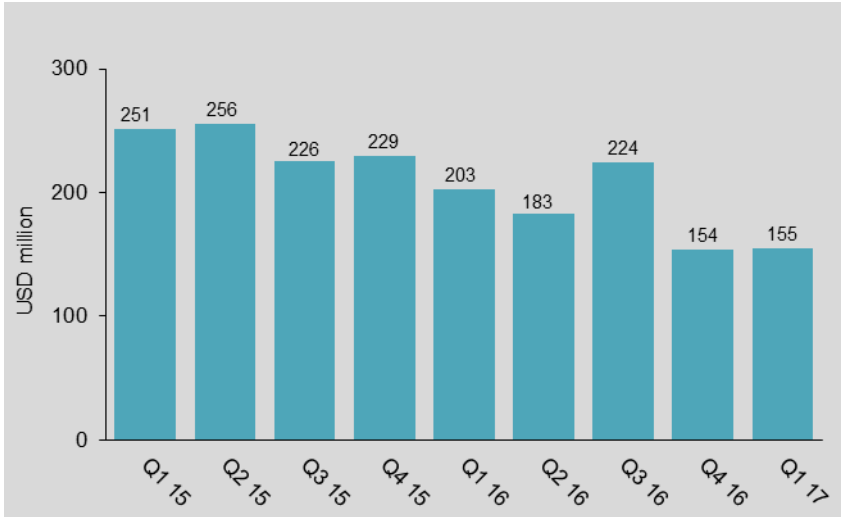


- Q1 2017 reflects a challenging winter season with low project demand and excess supply
- EBITDA USD 30.1 million
- Pre-funding level of 118%
- Completed USD 35 million subsequent offering
- *Ramform Hyperion* delivered
- Significant order book increase

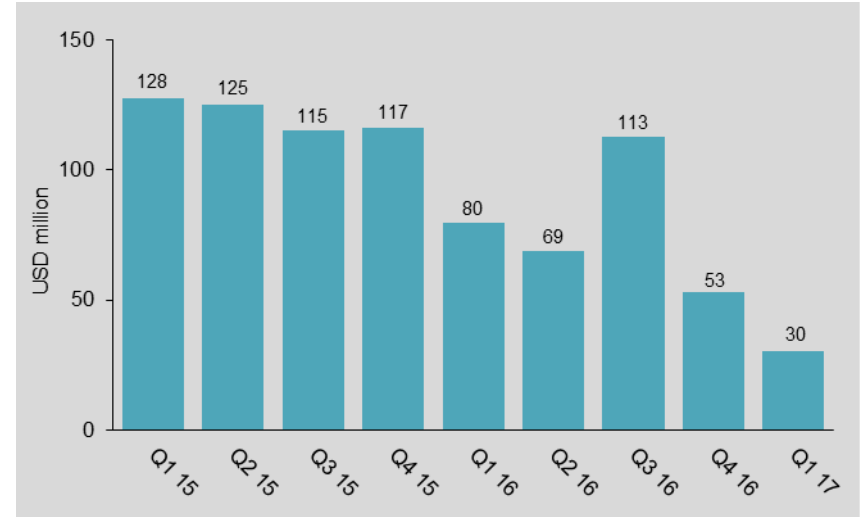
**Improved revenue visibility for 2017**

# Financial Summary

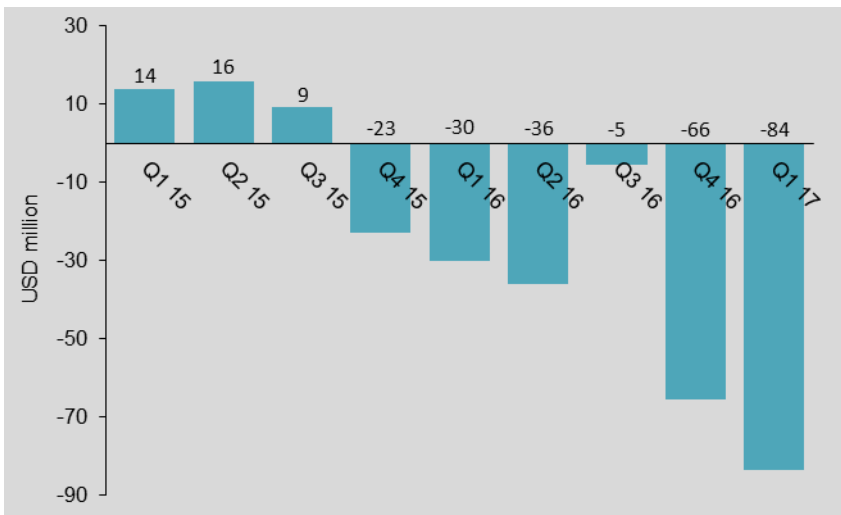
**Revenues**



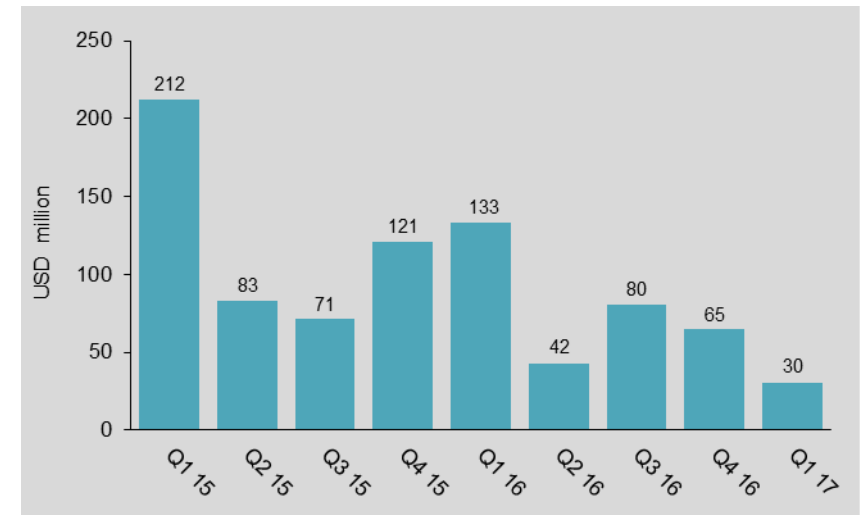
**EBITDA\***



**EBIT\*\***



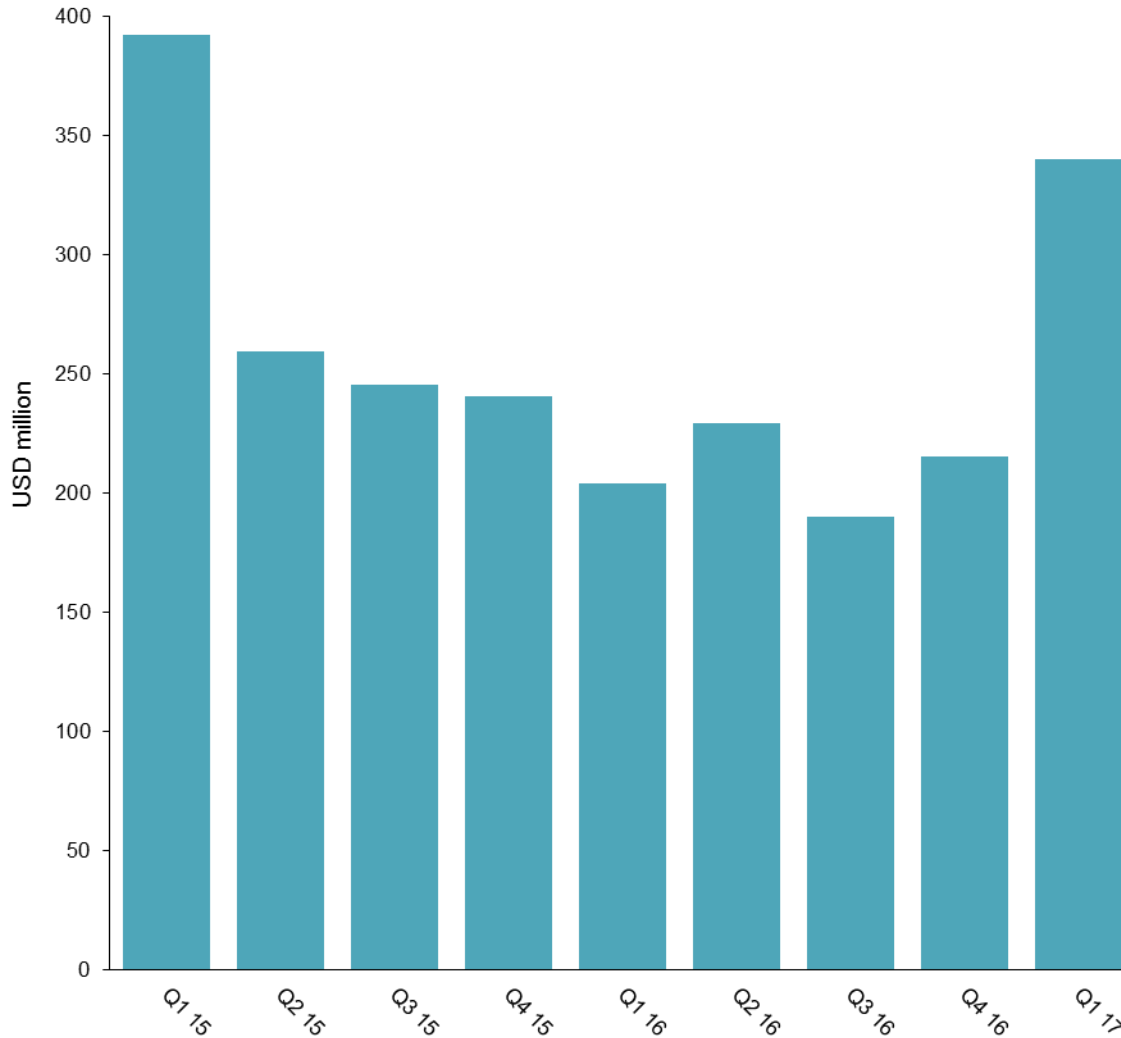
**Cash Flow from Operations**



\*EBITDA, when used by the Company, means EBIT excluding Other charges, impairment and loss/gain on sale of long-term assets and depreciation and amortization.

\*\*Excluding impairments and Other charges.

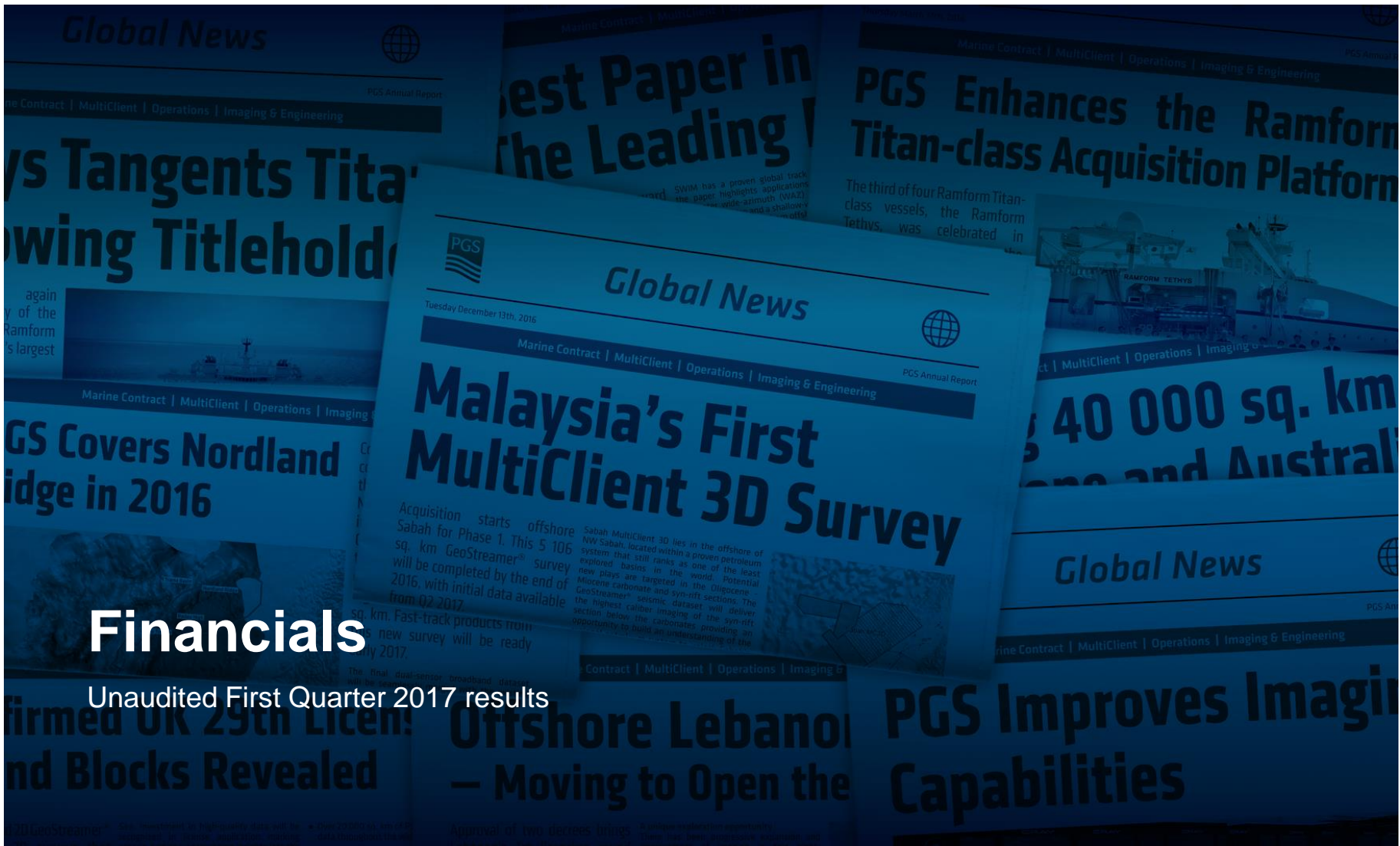
# Order Book



- Order book of USD 340 million by end Q1 2017
  - Of which USD 196 million relates to MultiClient
  - Sequential increase of close to 60%
  - Highest level in two years
  
- Vessel booking\*
  - ~100% booked for Q2 2017
  - ~75% booked for Q3 2017
  - ~35% booked for Q4 2017
  - ~15% booked for Q1 2018

\*As of May 4, 2017, based on 9 active vessels and excluding cold-stacked vessels.





# Financials

Unaudited First Quarter 2017 results



# Consolidated Statement of Profit and Loss Summary

	Q1	Q1	Full year
USD million (except per share data)	2017	2016	2016
Revenues	154.8	203.1	764.3
EBITDA*	30.1	78.6	313.3
Operating profit (loss) EBIT ex impairment and other charges, net	(83.5)	(30.2)	(137.5)
Operating profit (loss) EBIT	(93.7)	(31.6)	(180.3)
Net financial items	(9.3)	(30.5)	(82.6)
Income (loss) before income tax expense	(103.0)	(62.2)	(262.8)
Income tax expense	(3.5)	5.1	(31.2)
Net income (loss) to equity holders	(106.5)	(57.1)	(293.9)
EPS basic	(\$0.32)	(\$0.24)	(\$1.21)
EBITDA margin*	19.4 %	38.7 %	41.0 %
EBIT margin ex impairment and other charges, net	-53.9 %	-14.9 %	-18.0 %

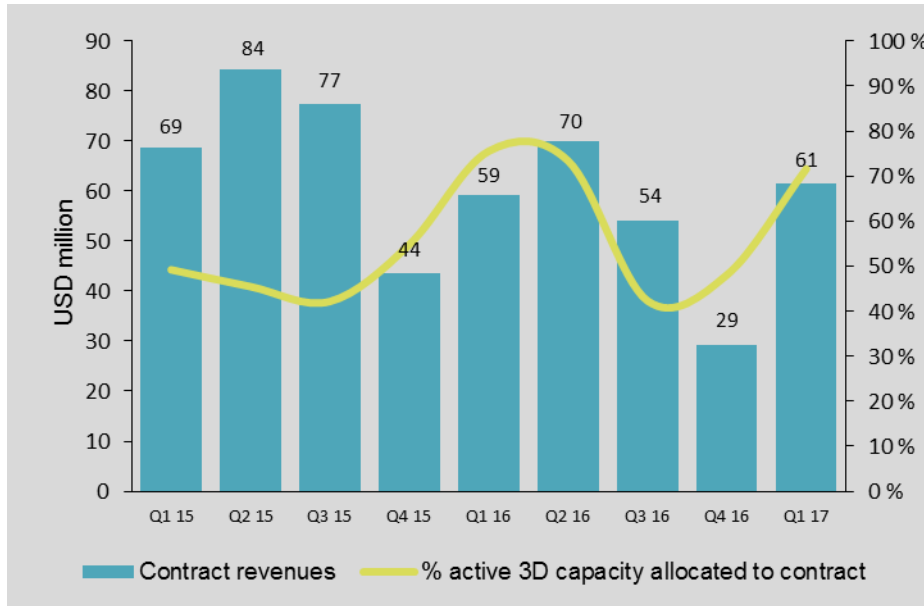
- Revenue decline versus Q1 2016 due to lower MultiClient and Imaging revenues, somewhat offset by higher contract revenues
- Impairments and other charges, net, of USD 10.2 million in Q1 2017
  - USD 1.4 million of impairments relating to the MultiClient library
  - USD 8.8 million of other charges, net, primarily relating to provision for onerous contracts

\*EBITDA, when used by the Company, means EBIT excluding Other charges, impairment and loss/gain on sale of long-term assets and depreciation and amortization.

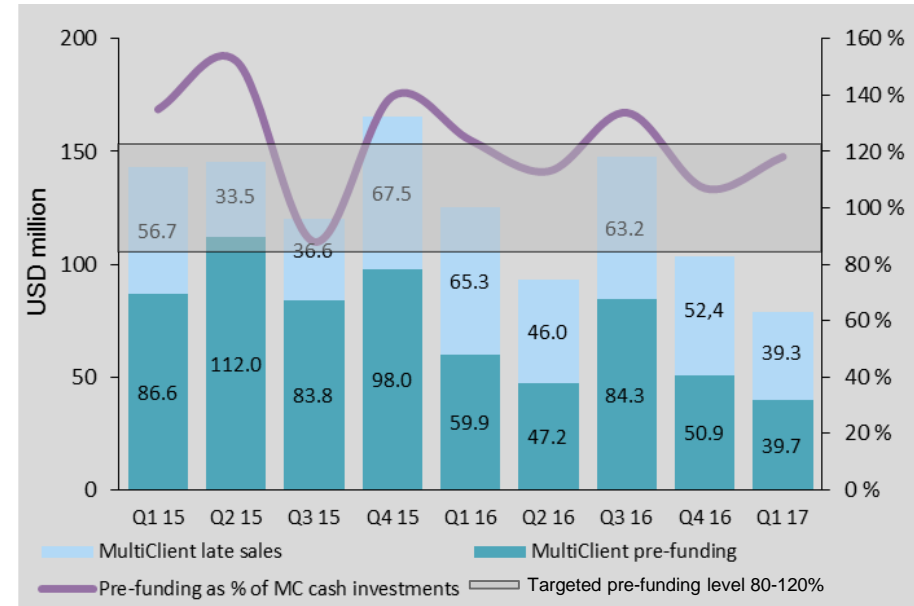
The accompanying unaudited financial information has been prepared under IFRS. This information should be read in conjunction with the unaudited first quarter 2017 results, released on May 11, 2017.

# Q1 2017 Operational Highlights

## Contract revenues



## MultiClient revenues

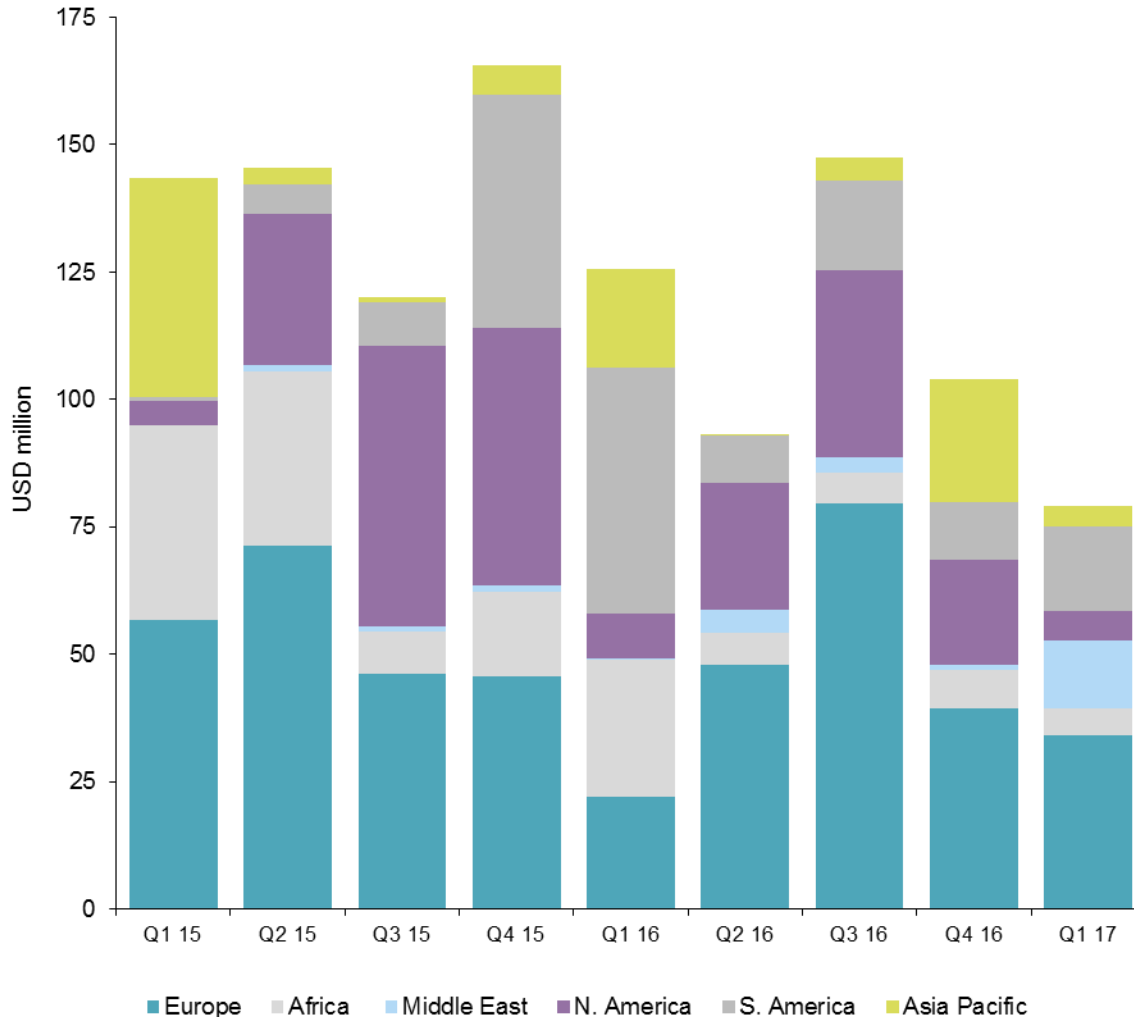


- Total MultiClient revenues of USD 79.0 million
  - Pre-funding revenues of USD 39.7 million
  - Pre-funding level of 118% on USD 33.6 million of MultiClient cash investment
  - Late sales revenues of USD 39.3 million
- Marine contract revenues of USD 61.4 million reflect a still challenging market environment with very low prices



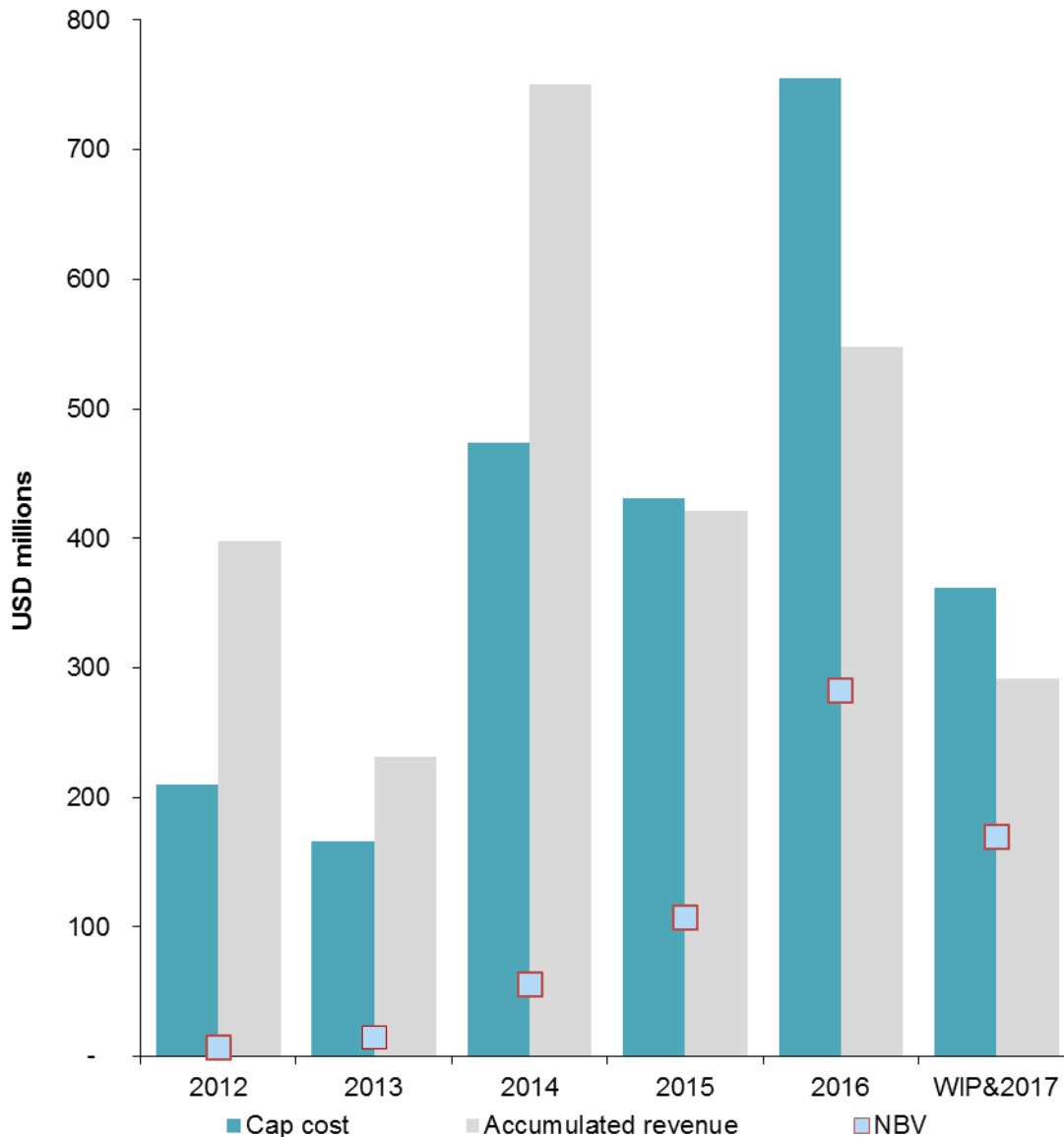
# MultiClient Revenues per Region

## Pre-funding and Late Sales Revenues Combined



- Late sales revenues were dominated by Europe and South America
- Q1 pre-funding relatively low due to low MultiClient investment activity
- Gradual increase of well pre-funded MultiClient projects through Q2 and Q3
- MultiClient revenues are expected to continue to see regional and quarterly fluctuations

# MultiClient Vintage Distribution



- MultiClient library book value of USD 626.7 million as of March 31, 2017
  - Down from USD 647.7 million in previous quarter
- Moderate net book value for surveys completed 2012-2015
- Q1 2017 amortization rate of 88%
  - High due to low sales combined with straight-line amortization of completed surveys
- 2017 amortization expense expected to be in the range of USD 350-375 million

# Key Operational Numbers

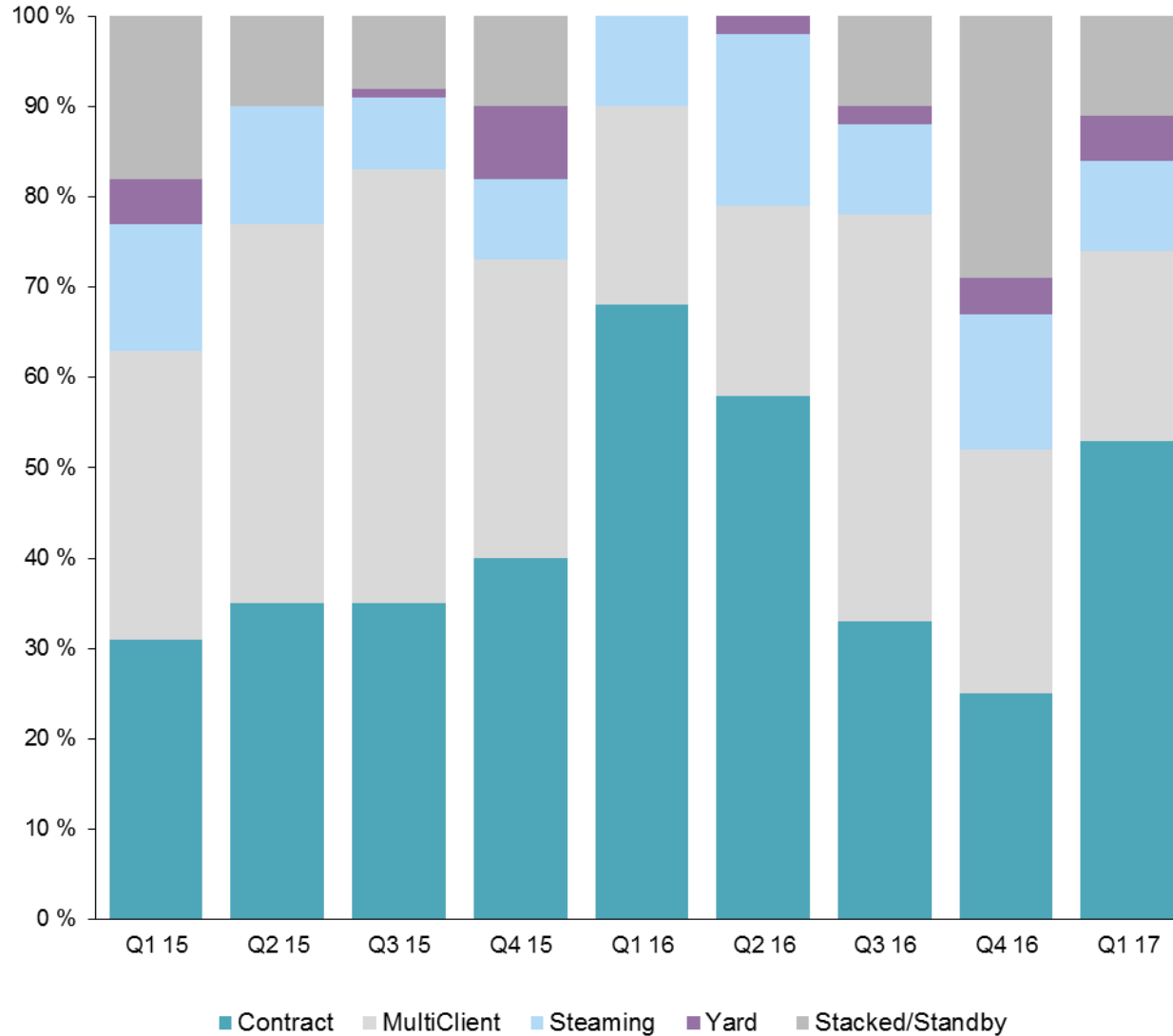
USD million	2017	2016			
	Q1	Q4	Q3	Q2	Q1
Contract revenues	61.4	29.3	54.2	69.9	59.2
MultiClient Pre-funding	39.7	50.9	84.3	47.2	59.9
MultiClient Late sales	39.3	52.4	63.2	46.0	65.3
Imaging	13.8	19.6	16.0	17.9	16.6
Other	0.6	1.9	6.4	2.1	2.1
<b>Total Revenues</b>	<b>154.8</b>	<b>154.1</b>	<b>224.1</b>	<b>183.0</b>	<b>203.1</b>
Operating cost	(124.7)	(101.0)	(111.4)	(114.2)	(124.6)
<b>EBITDA*</b>	<b>30.1</b>	<b>53.1</b>	<b>112.7</b>	<b>68.8</b>	<b>78.6</b>
MultiClient amortization and impairment	(70.6)	(97.6)	(86.2)	(62.9)	(68.1)
Depreciation and amortization of long-term assets (excl. MC library)	(44.5)	(42.0)	(31.9)	(42.1)	(40.7)
Impairment and loss on sale of long-term assets (excl. MC library)	-	(7.8)	(9.2)	(4.2)	-
Other charges, net	(8.8)	1.9	3.1	(4.2)	(1.4)
<b>EBIT</b>	<b>(93.7)</b>	<b>(92.4)</b>	<b>(11.5)</b>	<b>(44.6)</b>	<b>(31.6)</b>
CAPEX, whether paid or not	(101.6)	(28.7)	(19.0)	(51.9)	(108.9)
Cash investment in MultiClient	(33.6)	(47.8)	(63.0)	(41.8)	(48.3)
<b>Order book</b>	<b>340</b>	<b>215</b>	<b>190</b>	<b>230</b>	<b>204</b>

\*\*EBITDA, when used by the Company, means EBIT excluding Other charges, impairment and loss/gain on sale of long-term assets and depreciation and amortization.

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# Vessel Utilization\*

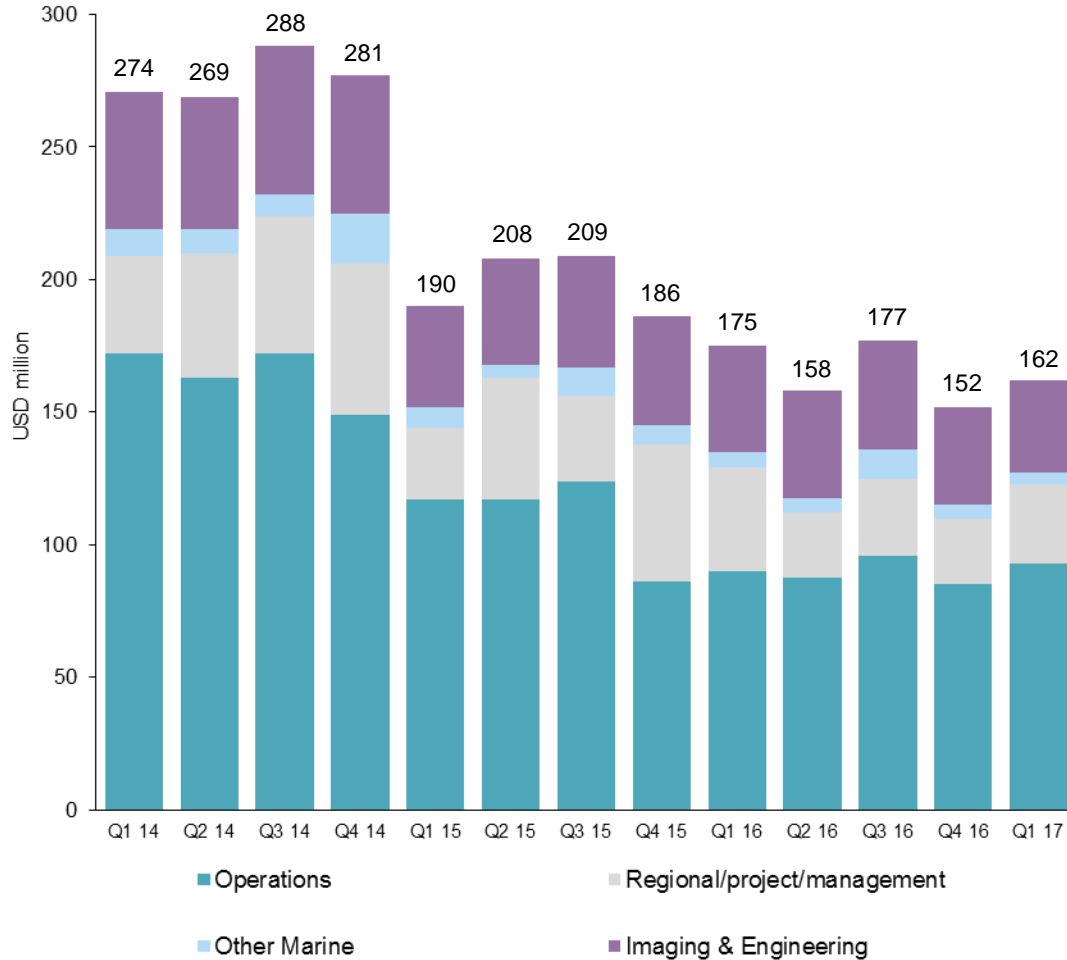
## Seismic Streamer 3D Fleet Activity in Streamer Months



- 74% active vessel time in Q1 2017
  - *Ramform Vanguard* warm-stacked
  - Some standby time due to the weak winter season
- Vessel utilization to be higher in Q2 2017
  - Approx. 30% of active vessel time scheduled for MultiClient
  - Increased production with *Ramform Hyperion* and *Ramform Vanguard* commencing operations
- More MultiClient than contract in Q3 and Q4

\* The Q1 2017 vessel allocation excludes cold-stacked vessels.

# Group Cost\* Focus Delivers Results

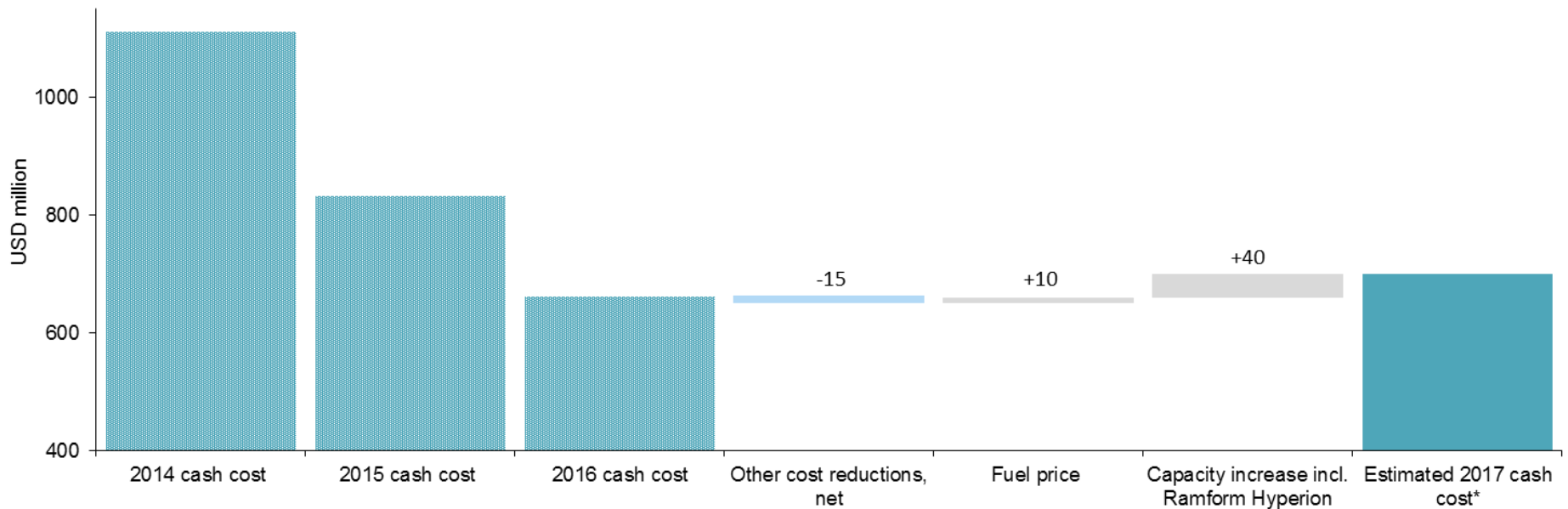


- Strong cost management
- Sequential cost increase primarily due to higher fleet utilization
- Quarterly cost will increase with *Ramform Hyperion* and *Vanguard* commencing operations in Q2

**Full year gross cash cost expected to be approx. USD 700 million**

\*Gross cash costs are defined as the sum of reported net operating expenses (excluding depreciation, amortization, impairments and Other charges and the cash operating costs capitalized as investments in the MultiClient library as well as capitalized development costs.

## Cost Discipline Remains a Key Priority in 2017



- 2016 gross cash cost more than 40% lower than in 2014
- 2017 cash cost of ~USD 700 million – modest increase from structurally lower level mainly attributable to:
  - More operated capacity with full year operation of *Ramform Tethys* and delivery of *Ramform Hyperion*
  - Expected increase of fuel prices
- Tight cost control continues

\*Estimate based on a stable USD against the blend of currencies in PGS cost base.



## Consolidated Statements of Cash Flows Summary

	Q1	Q1	Full year
USD million	2017	2016	2016
Cash provided by operating activities	30.0	133.3	320.9
Investment in MultiClient library	(33.6)	(48.3)	(201.0)
Capital expenditures	(107.6)	(114.4)	(218.2)
Other investing activities	21.5	(97.3)	(109.5)
<b>Net cash flow before financing activities</b>	<b>(89.7)</b>	<b>(126.7)</b>	<b>(207.8)</b>
Financing activities	66.8	161.6	187.9
<b>Net increase (decr.) in cash and cash equiv.</b>	<b>(22.9)</b>	<b>34.8</b>	<b>(19.9)</b>
Cash and cash equiv. at beginning of period	61.7	81.6	81.6
<b>Cash and cash equiv. at end of period</b>	<b>38.8</b>	<b>116.4</b>	<b>61.7</b>

- Cash flow from operating activities of USD 30.0 million in Q1 2017
  - Y-o-Y decrease is due to lower earnings and less contribution from working capital reduction than in Q1 2016
- New build capex of USD 86.9 million relating to the delivery of *Ramform Hyperion*

## Balance Sheet Key Numbers

	March 31	March 31	December 31
USD million	2017	2016	2016
Total assets	2,824.3	3,029.2	2,817.0
MultiClient Library	626.7	692.8	647.7
Shareholders' equity	1,285.1	1,403.0	1,359.4
Cash and cash equivalents (unrestricted)	38.8	116.6	61.7
Restricted cash	111.6	89.3	101.0
Liquidity reserve	273.8	496.6	271.7
Gross interest bearing debt	1,242.7	1,326.8	1,191.4
Net interest bearing debt	1,093.2	1,120.9	1,029.7

- Liquidity reserve of USD 273.8 million
- Net interest bearing debt increased by USD 63.5 million primarily as a result of delivery of *Ramform Hyperion*
- Total leverage ratio of 4.88:1 as of March 31, 2017, compared to 3.94:1 as of December 31, 2016
- Shareholders' equity at 46% of total assets

## Summary of Debt and Drawing Facilities

Long term Credit Lines and Interest Bearing Debt	Nominal Amount as of March 31, 2017	Total Credit Line	Financial Covenants
USD 400.0 million Term Loan (“TLB”), Libor (minimum 0.75%) + 250 basis points, due 2021	USD 388.0 million		None, but incurrence test: total leverage ratio $\leq 3.00x^*$
Revolving credit facility (“RCF”), due 2020 Libor + margin of 325-625 bps (linked to TLR) + utilization fee	USD 165.0 million	USD 400.0** million	Maintenance covenant: total leverage ratio $\leq 5.50x$ , to Q2-2017, 5.25x Q3-17, 4.75x Q4-17, 4.25x Q1-18, thereafter reduced by 0.25x each quarter to 2.75x by Q3-19
Japanese ECF, 12 year with semi-annual instalments. 50% fixed/ 50% floating interest rate	USD 451.7 million	USD 451.7 million	None, but incurrence test for loan 3&4: Total leverage ratio $\leq 3.00x^*$ and Interest coverage ratio $\geq 2.0x^*$
December 2020 Senior Notes, coupon of 7.375%	USD 212.0 million		None, but incurrence test: Interest coverage ratio $\geq 2.0x^*$
December 2018 Senior Notes, coupon of 7.375%	USD 26.0 million		None

\*Carve out for drawings under ECF and RCF

\*\*Reducing to USD 350 million in September 2018.



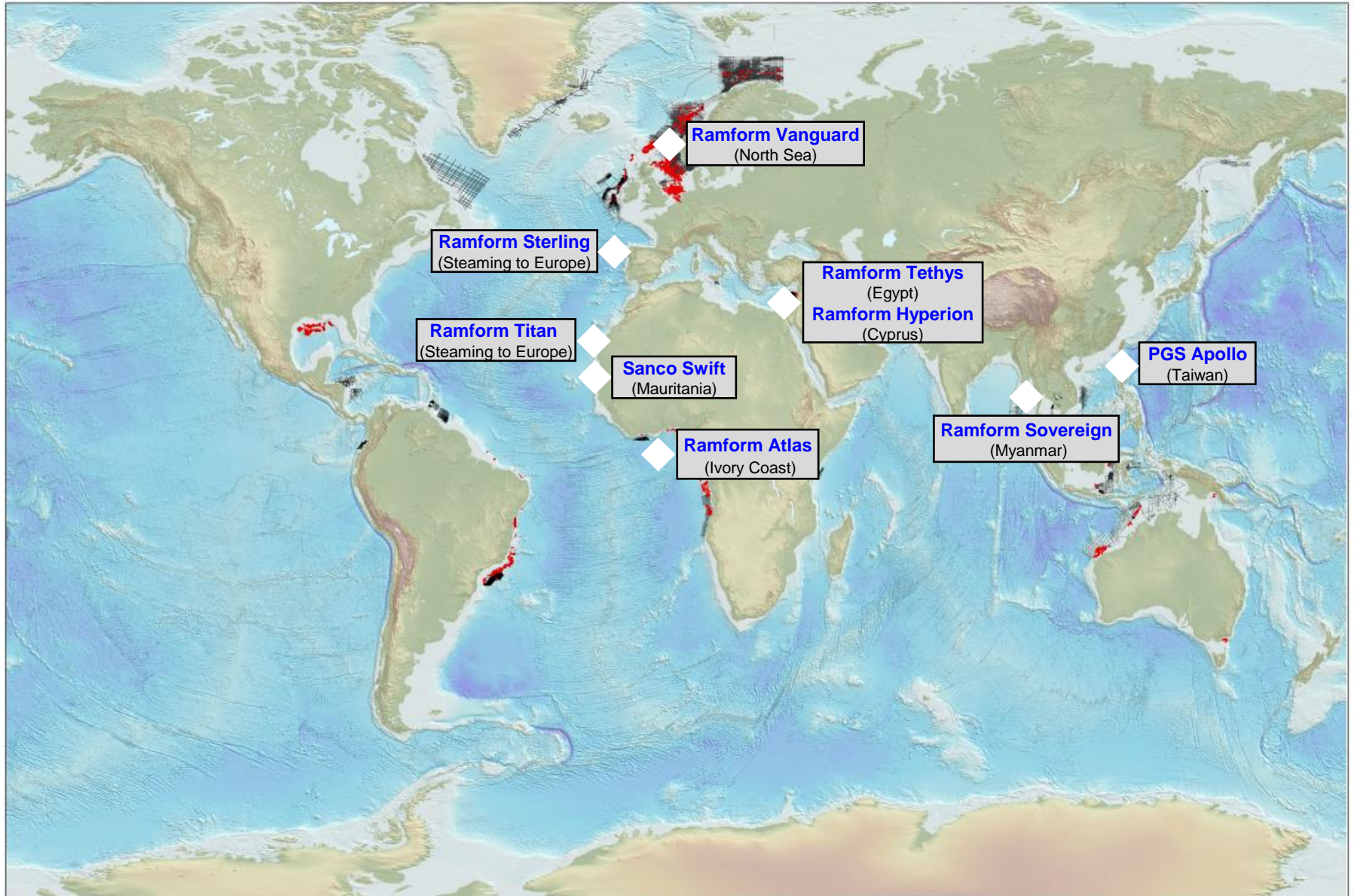
# Operational Update and Market Comments

Unaudited First Quarter 2017 results





# Streamer Operations May 2017



# Marine Seismic Market



- Substantial improvement in oil companies' cash flow
- Contract market still challenging, but with pockets of opportunities
  - 4D production markets
  - Capacity constrained markets
- Industry more or less fully booked for Q2 and Q3
- Still limited visibility for the winter season
  - Even though improved from 2016



# Market Activity

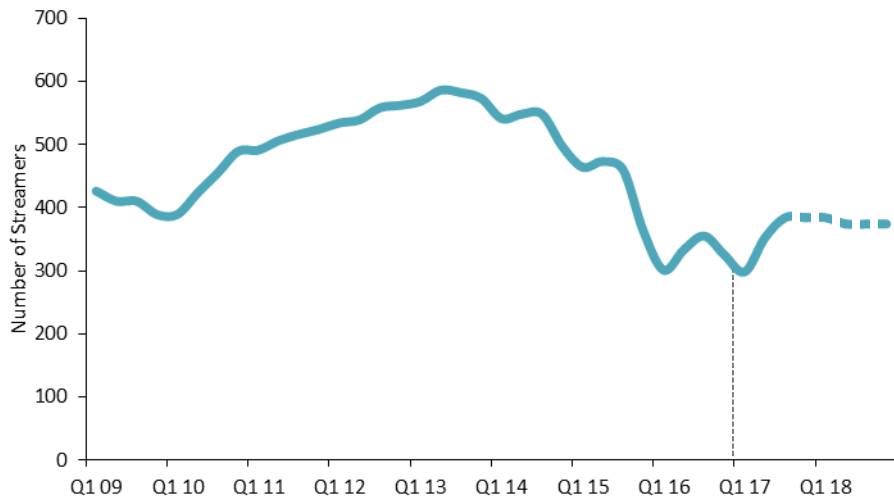
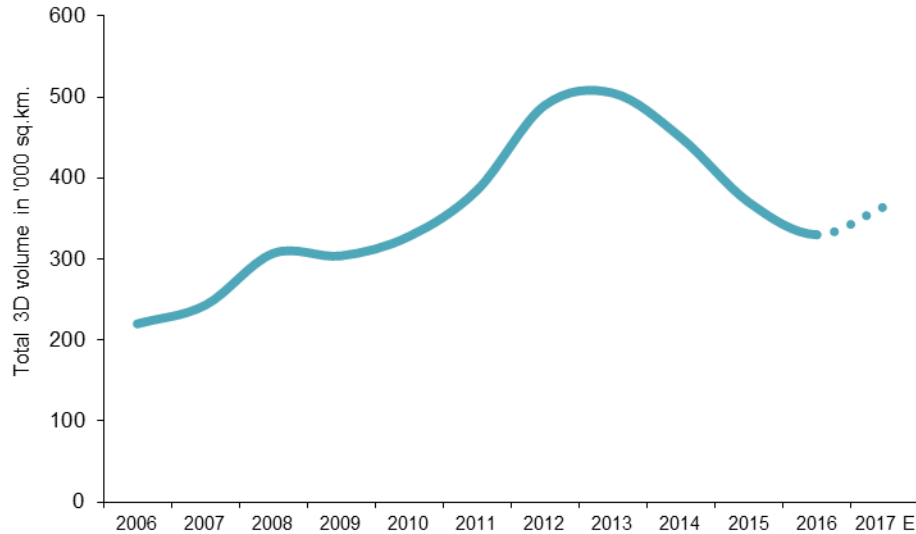
Bidding Activity for Marine Contract excluding MultiClient



- Currently low bidding activity, but stable leads pipeline
- Seismic demand primarily driven by:
  - Positioning for strategically important license rounds
  - Seismic commitments in E&P licenses
  - Significant increase in production seismic, especially in North Sea, West Africa and Brazil
- Overall MultiClient market share expected to increase

Source: PGS internal estimate as of end April 2017. Value of active tenders and sales leads are the sum of active tenders and sales leads with a probability weight and represents Marine 3D contract seismic only.

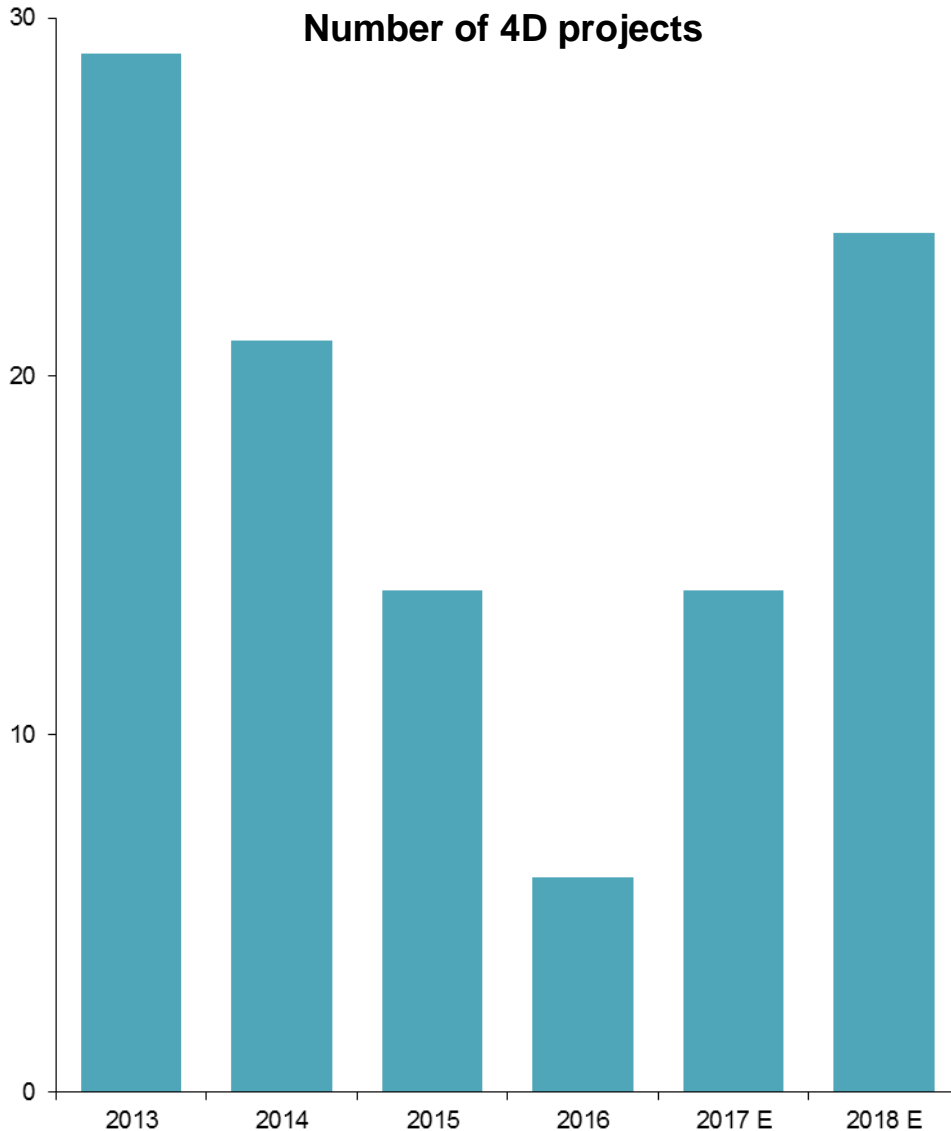
# Marine Seismic Market Volume and Supply



- Seismic acquisition volume expected to increase ~10% in 2017 compared to 2016, with downside risk due to:
  - Low Q1 sq.km production
  - Change in mix with more 4D requiring more capacity per sq.km
  
- Industry streamer capacity will increase during the summer season due to delivery of *Ramform Hyperion* and vessels coming back from warm-stack
  - 2017 summer season capacity approx. 35-40% lower than 2013 peak
  - Warm stacking used by the industry for flexible capacity as long as streamers are available
  
- Global streamer pool continues to shrink

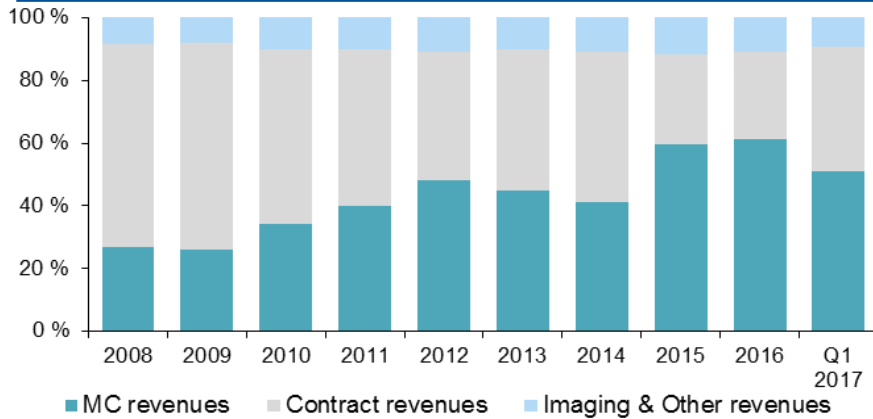
**Improved market balance for Q2/Q3**

# Production Seismic is Growing Significantly PGS with Premium Offering

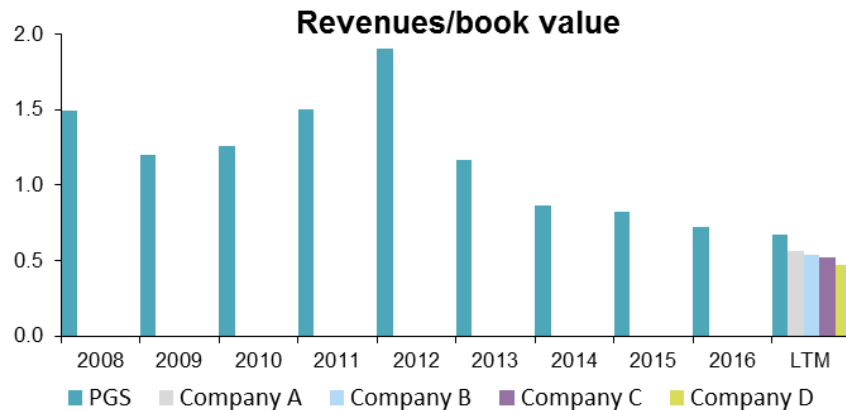


- Oil companies investing more in producing fields and fields under development
- Number of production seismic (4D) projects will more than double in 2017 compared to 2016, and is expected to increase further in 2018
- PGS will do more than 50% of the global 4Ds for 2017
- 4D activity increasing in North Sea, West Africa and Brazil
- PGS well positioned in the 4D market

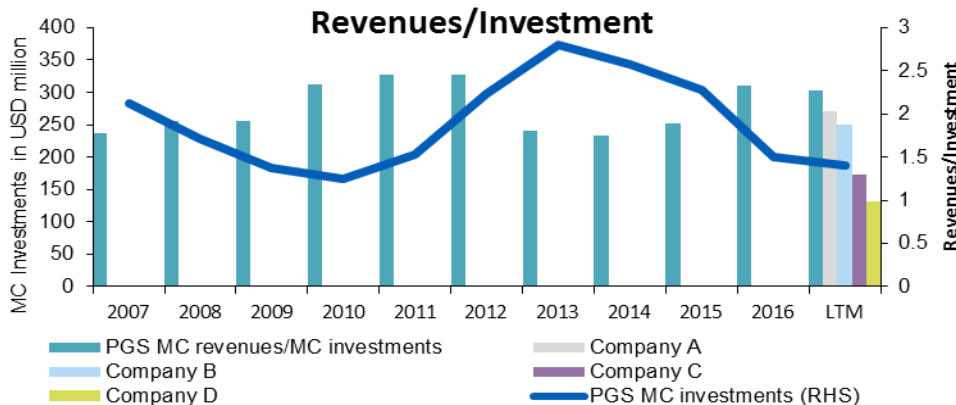
# Industry Leading MultiClient Performance



- Strategic priority since 2010 to increase weighting of the MultiClient business
  - Brings greater stability to overall Group performance in a highly cyclical market
  - MultiClient share of total market will continue to increase going forward



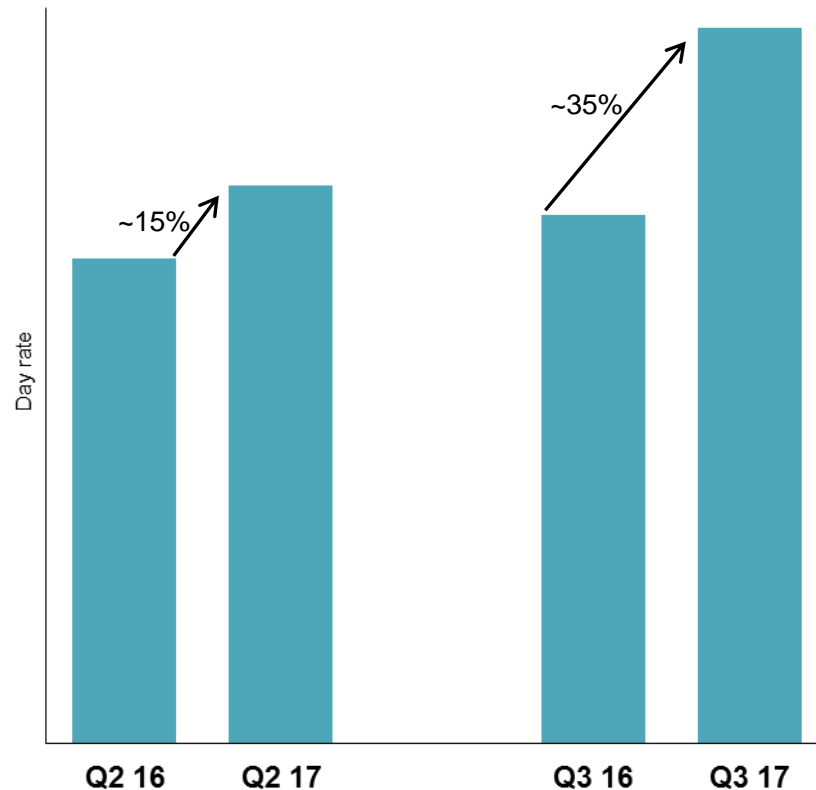
- Revenues currently dominated by MultiClient
  - 51% of revenues in Q1 2017
  - Most of EBITDA is generated by MultiClient activities
  - GeoStreamer, leading productivity and advanced, high quality imaging drives higher returns from library



- Retains flexibility to leverage a recovery in the marine contract market
  - Marine contract player with differentiating productivity and technology

# Achieved Y-o-Y Summer Season Price Increases

## Average Dayrate of Sold Marine Contract Projects



- Somewhat tighter Q2/Q3 market
  - Opportunity driven price increases
- Increased share of 4D
- Increased interest for seismic data with longer *shelf-life*
- Differentiating offering:
  - Highly competitive and productive vessels
  - Unique GeoStreamer technology

Active capacity allocation\*

	Q2 16	Q2 17		Q3 16	Q3 17
<b>Contract</b>	73%	~70%		42%	~25%
Regions with contract activity	Asia, South-America, Europe	Europe, West Africa, Middle East, Asia		South-America, West-Africa, Asia	West Africa, Europe, Asia
<b>MultiClient</b>	27%	~30%		58%	~75%
Regions with MultiClient activity	Europe, Middle East, North America	Europe, North America, Middle East		Europe, North America	North America, Europe, Middle East

\*Percentage of the active fleet allocated to contract and MultiClient, subject to changes in the vessel schedule..

## 2017 Guidance

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- **Group gross cash cost ~USD 700 million**
  - Of which USD 250-275 million to be capitalized as MultiClient cash investments
  
- **MultiClient cash investments USD 250-275 million**
  - Pre-funding level of ~100%
  - Active 3D vessel time planned for MultiClient of ~50%
  
- **Capital expenditures of ~USD 150 million**
  - Including new build capex of ~USD 87 million



In Conclusion:

## Competitively Positioned to Navigate Current Market Environment



- Significant order book increase
- New build program completed
  - Better positioned to generate free cash flow
- Adequate liquidity position
- Continuous focus on cost and capex
- Industry leading MultiClient performance

**Visibility improved for 2017**

# Thank You – Questions?

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# Appendix

## Main Yard Stays\* Next Six Months



Vessel	When	Expected Duration	Type of Yard Stay
<i>PGS Apollo</i>	July 2017	7 days	Intermediate classing and major engine overhaul
<i>Ramform Hyperion</i>	August 2017	5 days	Guarantee work



\*Yard stays are subject to changes.

# Fleet Structure Provides Flexibility Through the Cycle

2017 2018 2019 2020 2021 2022 2023 2024 2025 2026

### The Ultra High-end Ramforms



### High-end Conventional on Charter



### High-end Ramforms - Flexible Capacity

- Ramform Vanguard - warm stacked
- Ramform Valiant - cold stacked
- Ramform Viking - cold stacked
- Ramform Challenger - cold stacked
- Ramform Explorer - cold stacked



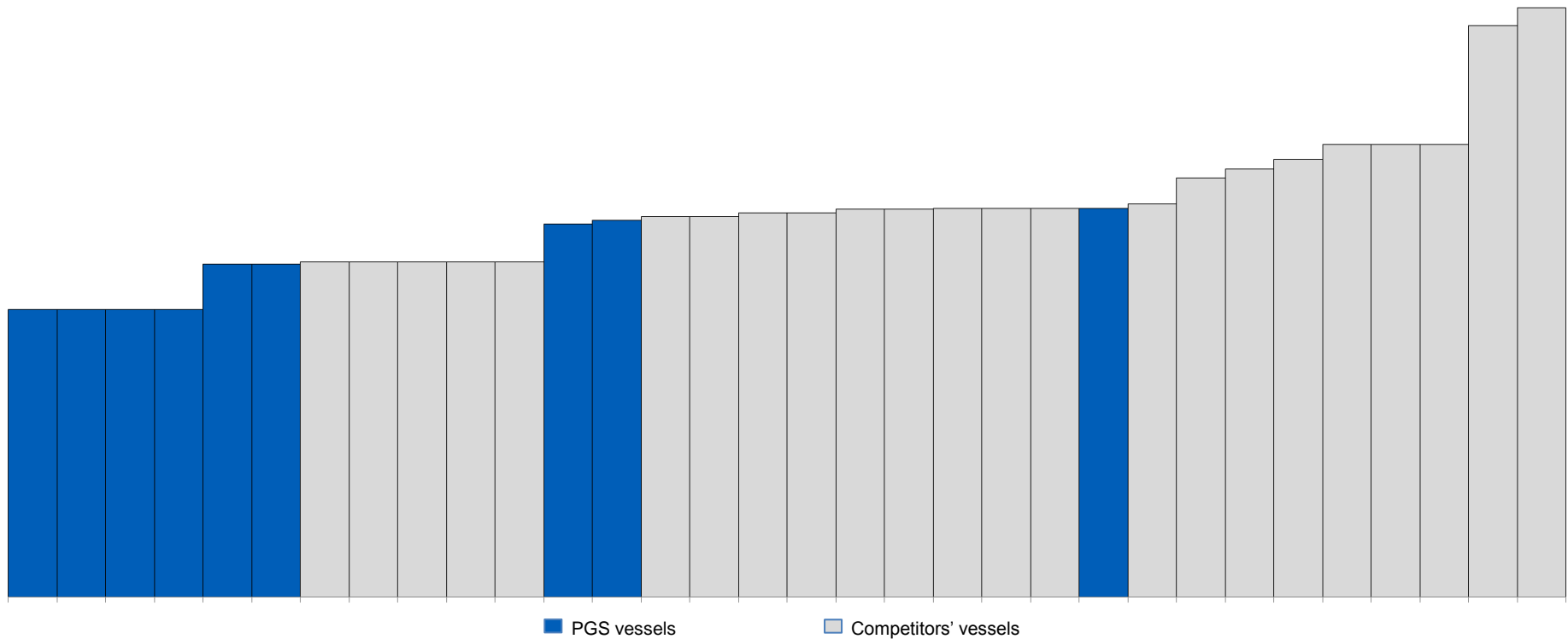
■ In operation    ■ Charter period    ■ Option period

\*With possibility to buy back after year 5 and 8

- Combination of chartered high capacity conventional 3D vessels and temporarily cold-stacked first generation Ramform vessels:
  - Improves fleet flexibility
  - Chartered capacity with staggered expiry structure
  - Positions PGS well to take advantage of a market recovery

**Significantly reduced capex requirement going forward**





- PGS retains lead on lowest cash cost per streamer
- Ramform vessels best positioned for both large, and streamer intensive (4D) surveys

Source: PGS internal estimates. The cash cost curve is based on typical number of streamer towed, and excludes GeoStreamer productivity effect. The graph shows all seismic vessels operating in the market. The Ramform Titan-class vessels are incorporated with 16 streamers, S-class with 14 streamers.

# Appendix

# RAMFORM Titan-Class

## Engineered for Geoscience



### Stability

The Titan design ensures better performance and room for growth. The ultra-broad delta shaped hull provides fantastic seakeeping capabilities and also means a smooth ride.



### Endurance

120 days without re-fueling.  
Dry docking interval 17.5 years.  
Maintenance at sea lowers operating costs.



### Redundancy

3 CP propellers, each with 2 motors - fully operational with 2 propellers.  
2 engine rooms, each with 3 generators - fully operational with 1 engine room.



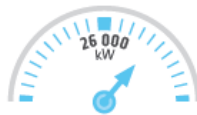
### All Weather

Widening the weather window and extending the seasons in northern and southern hemispheres without compromising HSEQ.



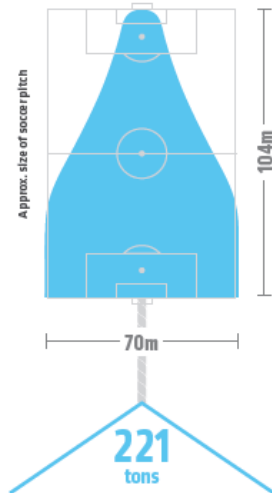
### Fuel Capacity

5700 m<sup>3</sup>  
Providing flexibility and endurance.



### Power

26000 kW  
Additional power enables more in-sea and onboard equipment.



### Wire Pull @ 4.5 kts

This measures towing force through the water and is a more realistic representation of towing capability than bollard pull.

### Space = Flexibility

Three times larger than modern conventional vessels, the Titans offer a highly efficient work environment with ample space for equipment, maintenance and accommodation.



### Towing Capacity

24 reel and streamer capacity provides flexibility and rapid deployment and retrieval.

## HSEQ



### Health

Social zones, gym, stability - rested crews perform better.



### Safety

Stable platform minimizes risk of fatigue, trips and falls. Space to work, redundancy in power and propulsion, 2 stern-launched workboats, back-deck automation. One Culture - closer cooperation between seismic and maritime crew.



### Environment

Larger spreads and faster turnaround mean fewer days on each job and leaves a smaller environmental footprint. DNV GL Clean (Design) - max SO<sub>x</sub> content of <2.5%. Reactive catalysts reduce NO<sub>x</sub> emissions by 90%.

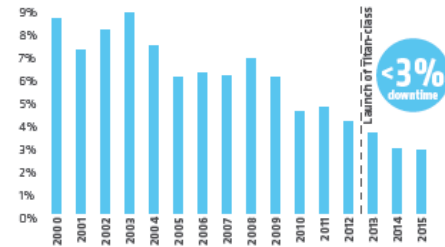


### Quality

Superior platform to deploy the best dual-sensor technology - 100% GeoStreamer. Equipped with streamer and source steering.

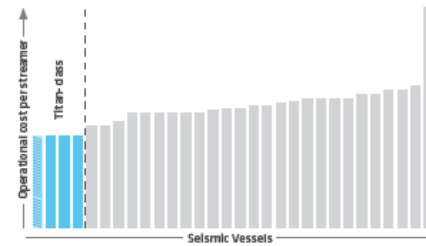
## Performance Results

### Downtime



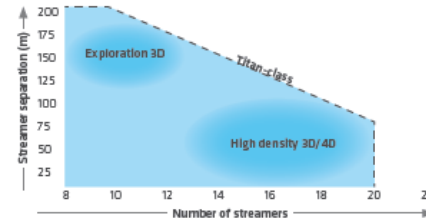
Ramform Titan - Zero maritime downtime and only 2.7% seismic downtime to date. Total sq.km acquired by Titan-class vessels is 89,712 sq. km.

### Cost



Ultra high capacity seismic vessels are more cost effective.

### Survey Type Flexibility



Titan-class vessels cover all the bases from highly efficient reconnaissance exploration surveys to the detailed resolution required for 4D production seismic.

## Records

:: Ramform Titan ::  
:: Bay of Bengal ::



### 18 Streamers

13.75 sq. km fan spread 18 streamers x 7.05 km with 100 m separation (2.2 km wide at tail)

### Coverage

Highest ever production 175.03 sq.km/day (average for this survey = 139 sq. km/day).

## Future Proof



### 25 years Lifespan

Setting the benchmark for this generation of seismic vessels and the next.

## Size POWER flexibility



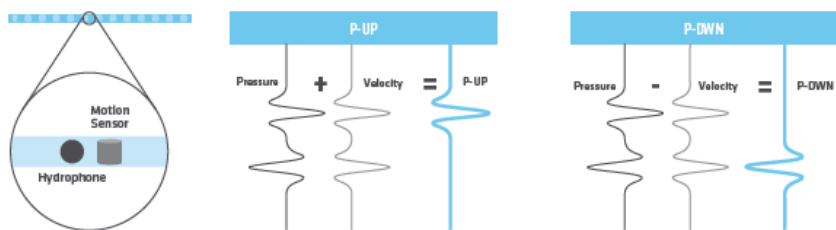


# PGSSWIM<sup>®</sup>

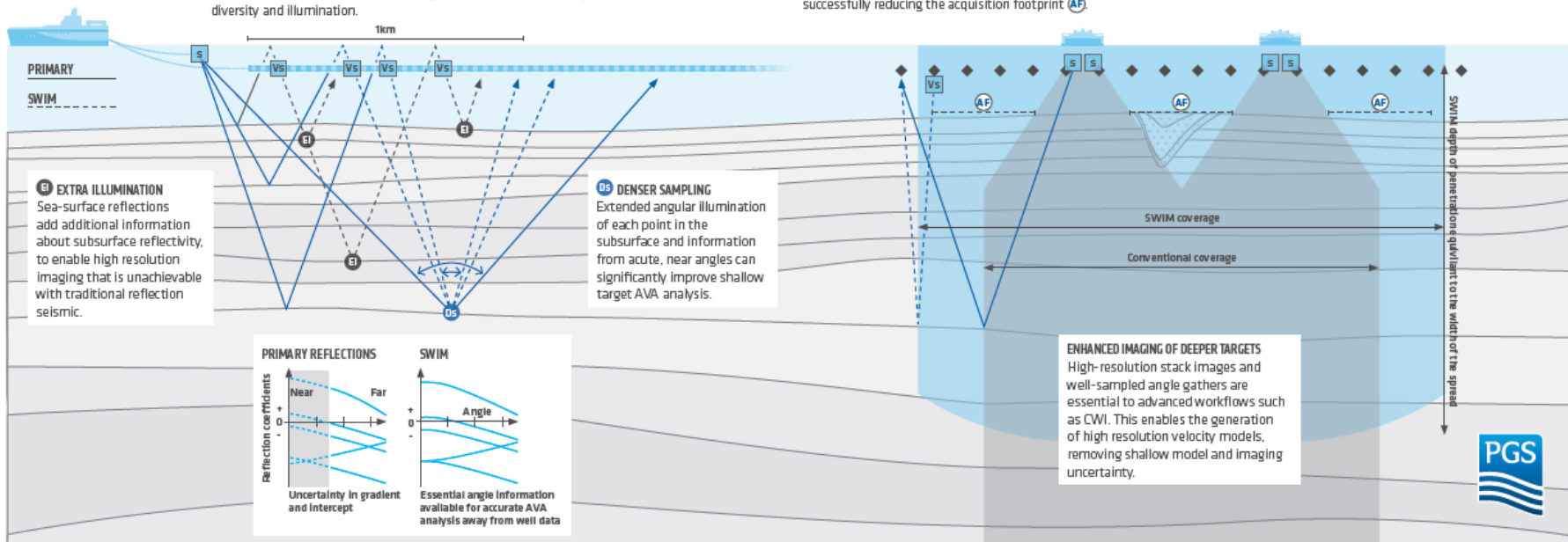
## Extending Illumination and Angular Diversity

### GeoStreamer data and SWIM imaging

Separated Wavefield Imaging (SWIM) is an innovative depth-imaging technology that uses both up- and down-going wavefields, recorded by GeoStreamer<sup>®</sup> dual hydrophone and motion sensors.



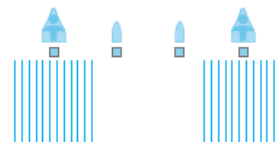
**VS VIRTUAL SOURCES** Utilizing sea-surface reflections and making each receiver a virtual source results in the survey area having increased source sampling and improved angular diversity and illumination.



## SWIM + Survey Geometries



**NARROW AZIMUTH TO WIDE TOW** SWIM enables the design and use of cost effective acquisition geometries such as super-wide tow. For narrow azimuth surveys in shallow water SWIM yields better sampled data in the angle domain.



**WIDE AZIMUTH** The extra subsurface illumination of sea-surface reflections combined with Wide Azimuth (WAZ) acquisition facilitates the imaging of salt flanks and other steeply dipping structures.



## Reduce Acquisition Footprint

Turning the receiver spread into virtual sources **VS** and receiver arrays reduces source sampling in the crossline direction from the distance between sail lines to that between streamers. Using SWIM in shallow water fills in gaps in near-surface coverage successfully reducing the acquisition footprint **AF**.

## Further Uses

**OCEAN BOTTOM DATA**  
SWIM has been successfully applied to seabed data such as ocean bottom node and cable recordings. SWIM can increase the shallow image area of the seabed and the underlying sediments by up to 700%.

**IMPROVED MULTIPLE REMOVAL**  
SWIM enables the generation of detailed shallow overburden images that are a requirement for some data-driven 3D SRME multiple removal methods.

**REDUCING DRILLING RISK** Superior illumination of the overburden using SWIM provides high-resolution images suitable for shallow hazard work, helping to identify drilling risks.



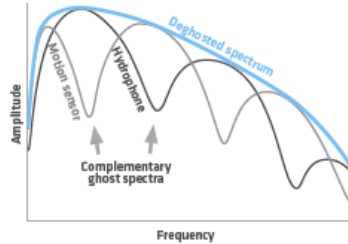
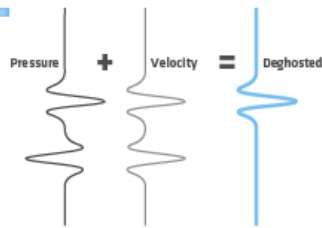
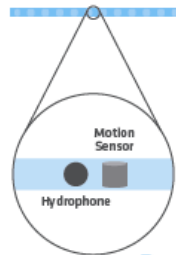
# Appendix

# GeoStreamer<sup>®</sup> since 2007

## More Measurements – Fewer Assumptions – Better Decisions

### Dual Sensors

Complementary recordings facilitate deghosting by wavefield separation at all water depths.



### Prestack Deghosting – More Options

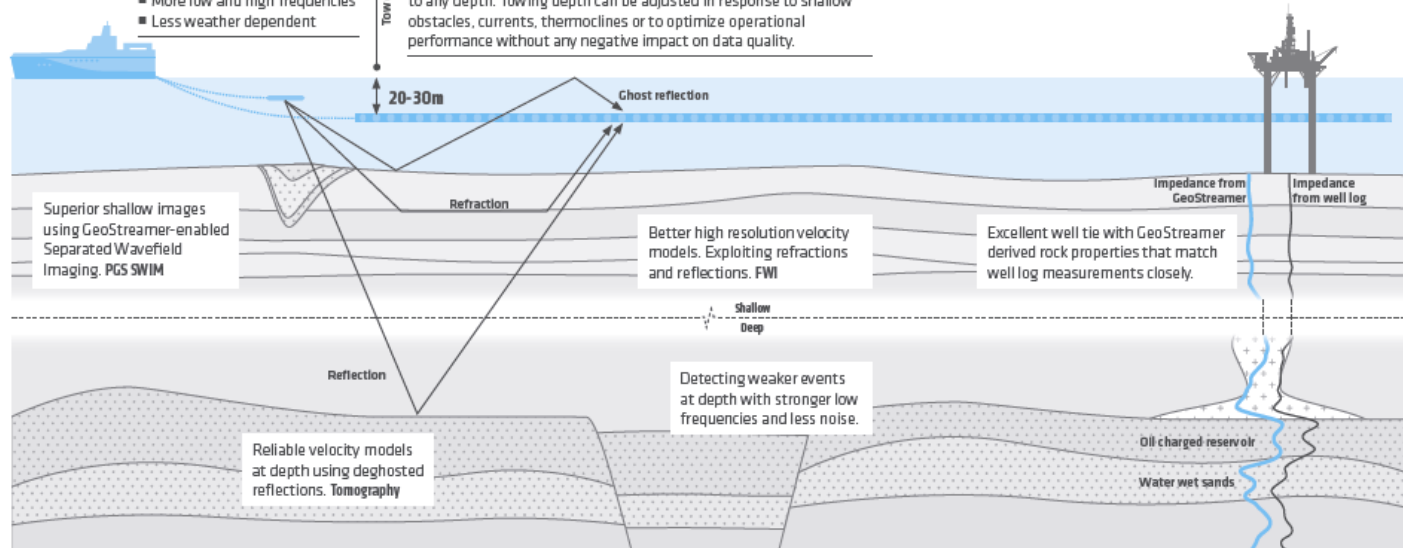
Deghosting using dual-sensor measurements with their complementary ghost spectra eliminates frequency gaps, and provides access to separate wavefield components for advanced processes like PGS SWIM, FWI and Reflection Tomography.

### Deep Tow

- Better signal, less noise
- More low and high frequencies
- Less weather dependent

### Flexible Tow Depth

Dual-sensor recording enables us to re-daturn the pressure wavefield to any depth. Towing depth can be adjusted in response to shallow obstacles, currents, thermoclines or to optimize operational performance without any negative impact on data quality.

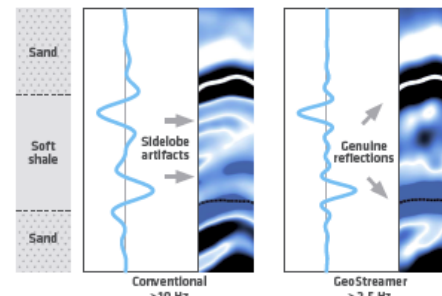


PGS vessels  
**100%**  
GeoStreamer

**1.4 Million**  
meters of active streamer

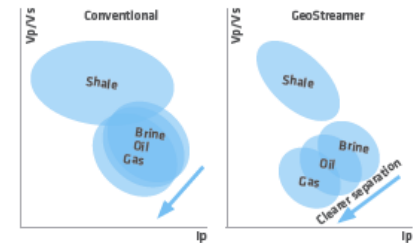
### Broader Bandwidth – Sharper Boundaries

Rich low frequency content reduces sidelobe artifacts, providing clearer reservoir details.



### De-risking with Precise Rock Properties

GeoStreamer prestack deghosting provides reliable attributes for better understanding of rock and fluid distribution. Improved attribute computations reduce uncertainty and enable more precise estimation of reserves.



### Monitoring Reservoir Changes

Wavefield reconstruction enables high repeatability for both legacy surveys and future 4D monitoring independent of sea-state. This reveals more subtle production-related changes.

### Proven in all Play Types

- **SUB-SALT** Improved signal recovery and amplitude characterization.
- **SUB-BASALT** Clearer sub-basalt imaging and intra-basalt layer definition.
- **CLASTICS** Reliable reservoir properties without the need for well control.
- **CARBONATES** Detailed mapping of internal structures and better porosity prediction.
- **INJECTITES** Resolution of complicated geometries and identification of true geological impedance boundaries.

Experience that counts  
**450 000 KM<sup>2</sup>**  
acquired worldwide

Aug 2016



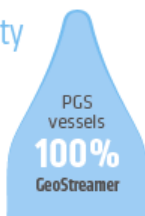
# ACQUISITION SOLUTIONS

## RAMFORM + GEOSTREAMER = EFFICIENCY + QUALITY

The unique combination of GeoStreamer® technology and Ramform® vessels delivers a premium imaging product to locate and derisk your prospect.

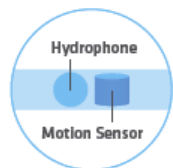
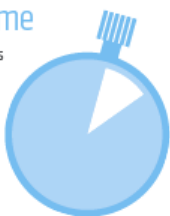
### Better Image Quality

Dual-sensors combined with towing the streamers deep, 3D spread control, source steering, continuous recording and the ability to tow dense streamer spreads, all contribute to subsurface images of greater clarity, accuracy and reliability.



### Reduced Survey Time

Faster turnaround time means less exposure to weather and faster access to data. We minimize the time it takes to complete a survey using 3D spread control, source steering, continuous recording, flexible tow depth and barnacle mitigation.



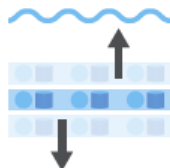
#### Dual Sensors

- Wavefield separation
- Better signal, less noise
- Tow depth independent
- True broadband



#### Dense Spreads

- Better receiver sampling
- Increased 3D/4D resolution
- Improved 4D repeatability



#### Flexible Tow Depth

- Less weather impact
- Minimum drag, maximum efficiency
- Survey compatibility
- Increased 4D resolution



#### 3D SpreadControl

- Infill management
- Efficient deployment & recovery
- Improved 4D repeatability



#### Source Steering

- Infill management
- Efficient deployment & recovery
- Improved 4D repeatability

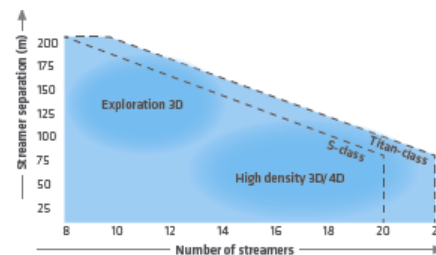


#### Continuous Recording

- Improved source sampling
- Increased vessel speed
- Flexible record length

### Survey Versatility

Our fleet is capable of covering all the bases from highly efficient exploration surveys to detailed 4D production seismic.



## Define Challenge and Select Technology

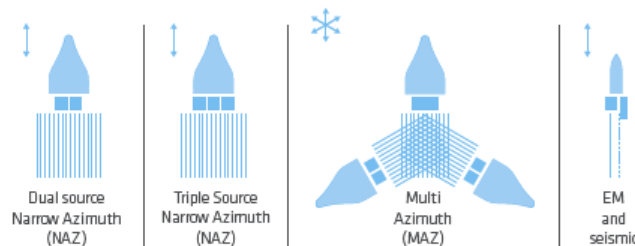
Tailored acquisition geometries make it easier to solve imaging challenges. Subsurface complexity and geophysical objectives determine the acquisition and imaging solutions to produce the best quality images in the most effective way.

### Coverage Options

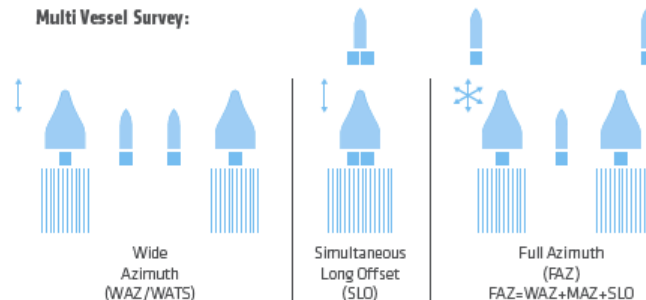
From single sail line to the ultimate full azimuth coverage. Target illumination increases with each additional pass and direction.



#### Single Vessel Survey:



#### Multi Vessel Survey:



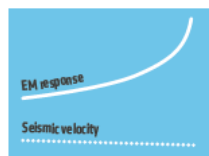
## Leading the Industry



March 2017

# TOWED STREAMER EM

## Reducing drilling risk



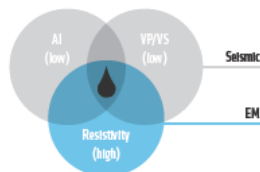
EM + seismic = reduced risk

Improved hydrocarbon saturation estimates.



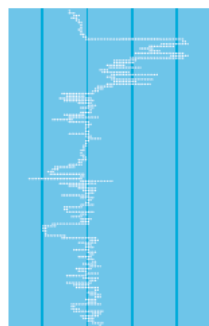
Sight & sound

Complementary data add new layers of comprehension: a bit like adding sight to sound. While seismic is the best measure of lithology, EM is more sensitive to changes in fluids.



Independent inversions

Seismic data can be inverted for velocity and for acoustic impedance. Inversion of EM data provides resistivity. Correlating all three improves drilling success.

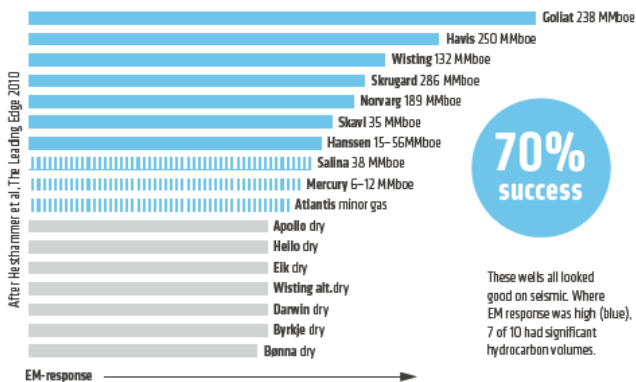


Resistivity

Hydrocarbon saturated rocks are typically highly resistive. Geologists access local resistivity data from well logs.

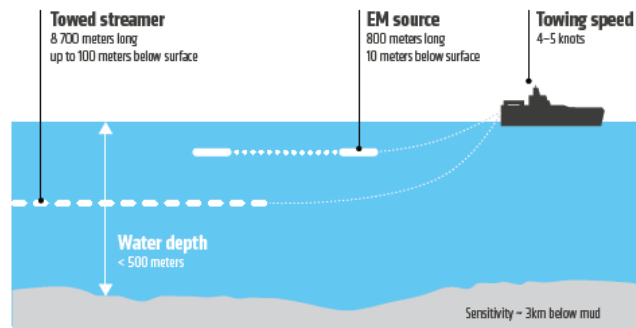
## Drilling success with EM

Barents Sea



## Operational 101

Towed streamer acquisition produces high density 2D or 3D EM data fast. The operation is very similar to seismic, making it easy to install, operate and even combine.



Fast

Acquisition speed up to 200 sq. or line km EM data / day



Flexible

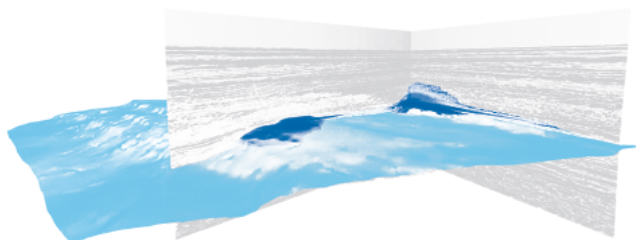
Multipurpose EM can de-risk frontier prospects, reveal drilling hazards, or identify missed tail end production.



Global

Northern Europe is the region with greatest EM coverage so far, but feasibility studies around the world show this technology has global potential.

## Adding EM to seismic



How and when

Improve ranking of prospects by adding 2D or 3D EM data to existing seismic data. Enhance EM resolution by using the seismic to guide the EM inversion.

Acquire EM and 2D GeoStreamer data efficiently and simultaneously with the same vessel to plan new 3D seismic.

## HSEQ



Health

PGS' high operational standards apply.



Safety

Standard PGS towed streamer operations and equipment reduces risk.

EM helps identify shallow gas drilling hazards.



Environment

Low environmental impact.

Fewer vessel days = lower emissions in both standalone and simultaneous acquisition modes.



Quality

Towed streamer EM produces high density data and permits onboard QC and processing.

