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

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.

Drilling success with EM
Barents Sea

- 70% success
- 7 out of 10 wells had significant hydrocarbon volumes

EM + seismic = reduced risk
Improved hydrocarbon saturation estimates.

EM-response
These wells all looked good on seismic. Where EM response was high (blue), 7 out of 10 had significant hydrocarbon volumes.

EM + seismic
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.

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

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.

Adding EM to seismic
Enhance EM resolution by using the seismic to guide the EM inversion.

Barents Sea
- Fast
- Flexible
- Global

Health
PGS’ high 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.

EM-response
These wells all looked good on seismic. Where EM response was high (blue), 7 out of 10 had significant hydrocarbon volumes.

Towed streamer
8 700 meters long
up to 100 meters below surface

EM source
800 meters long
10 meters below surface

Towing speed
4–5 knots