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Cheaper, faster and better: How Petrobras' Geophysical Acquisition is facing challenges of a potential growing O&G and renewables project portfolio

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Introduction

Petrobras, as Brazil's largest consumer of seismic data, has established itself as a major player in geophysical data acquisition, managing a diverse portfolio ranging from frontier exploration to production monitoring. The Geophysical Acquisition team is responsible for acquiring and delivering data, supporting projects at various maturity stages. Over the past decade, we have acquired more than 170,000 km² of seismic data (MC, 3D, 4D) and has experienced a growth trend in recent years. Looking ahead, the team's potential portfolio includes approximately 200,000 km² of raw and processed multi-client data in Brazil and other countries, with plans for about 50 seismic acquisitions covering around 50,000 km² of shot area to be acquired by 2030.

Method and/or Theory

General numbers and values of Petrobras' project portfolio and its main challenges. Based on the extensive and complex portfolio of geophysical acquisition projects, proposals and solutions for exploration, development of production, production, and renewable energies at Petrobras are discussed. In order to also encompass cost-efficiency projects innovations must be further stimulated, and technology related to sensors and sources must be researched to also independently reduce environmental impact.

The study analyzes historical seismic acquisition data spanning the past decade, encompassing both proprietary and multi-client acquisitions. We evaluate operational performance across different acquisition modalities (Streamer, Nodes, PRM) and assess key operational constraints, including:

- Temporal restrictions on crew operations
- Spatial limitations (60 km minimum shot distance)
- Budget optimization requirements
- Environmental impact considerations

Results and Conclusions

The use of new strategies and technologies to address challenges and perceived constraints, such as budgetary and environmental issues, is highlighted and exemplified. Collaboration with other seismic companies and oil and gas operators is essential in order to enable solutions and make geophysical projects more efficient, with faster and more cost-effective deliveries and improved seismic data.