

Dear sponsors and stakeholders,

I thought to share a new and additional opportunity that M-OSRP is providing that might be aligned with your business goals and objectives.

Separate from M-OSRP sponsorship , and the benefits and deliverables that sponsorship provides, we are offering to work with your team(s) to design models that capture your prioritized off-shore and on-shore challenges , and to test, compare, analyze and deliver results with the model data using M-OSRP research prototype proprietary software. We would work together and compare with current leading edge industry capability.

The M-OSRP software and codes used in these tests would only be available to M-OSRP sponsors, but the results of tests on your model data would be delivered within this new opportunity provided by M-OSRP. The model data tests would be stage one in this new cooperative/collaborative relationship. Below for easy reference please find the major projects within our program.

I thought that eliminating free surface and internal multiples that interfere with a target or reservoir primary, and without using energy minimization adaptive subtraction, and without damaging the primary, might be a good topic for starting a discussion. Another good topic is the Stolt CIII migration for heterogeneous media, the first migration that is equally effective for all frequencies at the target and reservoir. We are open to discuss and explore other challenges that are pressing and priority for E&P drilling decision effectiveness.

Please let me know if you would like to discuss and explore this opportunity. Thank you.

Warmest best regards,

Art

Dear Sponsors, Colleagues and Friends,

This note provides a brief summary of the projects, goals and deliverables within our program, and our plans going forward in 2017

In the link below please find videos and documents that describe where we are and where we are going in terms of projects, goals, deliverables and impact.

<http://mosrp.uh.edu/news/papers-videos-where-we-are-going-2016>

Below please find a succinct list and summary of the projects within M-OSRP:

PREPROCESSING FOR ONSHORE, OBS, and TOWED STREAMER ACQUISITION

Developing and delivering new and more effective methods for the essential preprocessing steps that in addition to their intrinsic value are necessary prerequisites for the new high-end and most effective methods that eliminating free surface and internal multiples , and that subsequently depth image and invert primaries.

Those prerequisites include: **removing ground roll and preserving reflection data at all offsets**, and **source and receiver de-ghosting for towed streamer, on-shore and ocean bottom acquisition, accommodating both flat horizontal and non-flat acquisition surfaces.**

MULTIPLE ELIMINATION FOR SURGICALLY REMOVING MULTIPLES THAT INTERFERE WITH TARGET AND RESERVOIR PRIMARIES

Developing and delivering the next generation of **urgently needed multiple removal capability**, with the **elimination of free surface and internal multiples**, without depending on energy minimization adaptive subtraction and thereby **accurately predicting and surgically removing a multiple that interferes with a target or reservoir primary, and with the unique ability to not damage the target or reservoir primary**. The latter interference between a multiple and target primary can very frequently occur on shore and very often off-shore, as well. That next generation of capability will only be delivered by M-OSRP and for many sponsors that project and delivery is the business driver and ROI.

MORE EFFECTIVE MIGRATION AND DIRECT INVERSION VELOCITY ANALYSIS

Progressing and delivering the **first migration method for heterogeneous media that is equally effective at all frequencies at the target and reservoir. It provides improved structural resolution and amplitude, compared to all current migration methods including RTM**. The documented codes for a 2D and 3D heterogeneous subsurface will be delivered in 2017. **This new and more effective migration will require a velocity model and we will progress a direct non-linear inverse scattering series method for velocity analysis as an alternative to all current indirect velocity analysis methods, for example, CIG flatness and FWI.**

<http://mosrp.uh.edu/news/invited-paper-submitted-on-direct-inversion>

[Key-note address, Abu Dhabi, March 31st, 2015 presented at the SEG FWI, Workshop Filling the gaps in Abu-Dhabi](#)

GAME CHANGING MIGRATION, DIRECT AND WITHOUT A VELOCITY MODEL

The direct inverse scattering series (ISS) depth imaging without a velocity model will be progressed and delivered as a tool box option. In contrast to other new approaches to migration, **for example, Interferometry and Marchenko imaging**, that require a velocity model, the ISS direct imaging method is the only imaging method that is direct and doesn't require a macro-velocity model or any other subsurface information.

The ISS direct depth imaging (without a velocity) subseries derives from the same exact set of equations, the inverse scattering series,

that earlier derived, e.g., the distinct ISS free surface and internal multiple subseries, and the subseries that performs Q compensation without knowing or needing to estimate Q. The ISS depth imaging subseries will once again have **the same GAME-CHANGING delivery and impact and will play the same role, on processing primaries** for structural determination and amplitude analysis, as ISS free surface and internal multiple removal has **already delivered for effectively eliminating multiples. M-OSRP has the potential and opportunity to deliver that game changing next generation imaging effectiveness and capability-providing a new tool box option for the most complex, inaccessible and daunting imaging challenges- arranging for currently inaccessible targets and reservoirs to become accessible and delivered.**

The projects listed above represent a comprehensive approach to addressing prioritized seismic exploration challenges, and a portfolio of deliverables including high impact game-changing multiple removal, imaging and inversion. That's the M-OSRP business model and return on investment. We look forward to staying in touch in 2017.

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<http://mosrp.uh.edu/news/business-drivers-roi-deliverables-ep-impact-2017>

<http://nsm.uh.edu/news-events/stories/2016/1024-weglein-award.php>

[**2016 SEG M-OSRP Executive Summary Presentation**](#)

<http://arthurbenjaminweglein.com>

<http://mosrp.uh.edu/news/awards-recognition-201612>

<http://mosrp.uh.edu/news/invited-presentation-petrobras-workshop-aug-2016>