# Integrated approaches to non-seismic disciplines – practical examples from onshore

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In practical exploration workflows today, non-seismic data add greatest value when integrated with seismic, well logs and ancillary disciplines. We'll illustrate some of the variations this integration takes, through worked case histories from the onshore environment. Here, the integration allows us to expand the zone of non-seismic exploration applications from the traditional deeper targets up to the near-surface; up into the low velocity layer for example.

The integration has progressed from co-rendering comparison of otherwise independent data results, through cases where seismic and well data have constrained the geometry and physical parameters respectively during gravity and EM inversions, and more recently into Simultaneous Joint Inversion (SJI).

Several case histories implementing Simultaneous Joint Inversion will be shown including;

1) Sub-basalt imaging in the Colombia River Basin, western USA. Deep EM (Magnetotellurics, MT) was used with seismic, through Joint Inversion to improve velocity model and associated PSDM

2) Sub-thrust imaging in Northern Oman mountains. Gravity was used with seismic to improve both time static computation and mid depth velocity model building for PSDM.

3) Seismic time statics. Shallow EM has been used in the Middle East to constrain the depth of base dunes (LVL) between upholes, providing input to the seismic computation. In a separate Middle East environment, gravity data collected along seismic lines has provided constraint to improve the near-surface velocity estimates, again through Joint Inversion.