The powerful CoViz® 4D visualization engine yields fast and easy manipulation and interrogation of massive 3D datasets. In particular, the CoViz 4D system has been optimized for the rapid loading and display of Light Detection and Ranging (LiDAR) data—datasets that can often consist of over a billion individual point samples.

Within CoViz 4D, proficient rendering and manipulation of high density point datasets is accomplished by utilizing dynamic data point scaling combined with seamless image tiling. On-the-fly point-decimation, culling, and tiling use sophisticated customized algorithms to minimize compute time while maximizing screen data display and fidelity; this approach optimizes the user-experience and yields world-class rendering performance on relatively modest desktop, and even laptop, consumer-grade hardware.

Moreover, the real value of CoViz 4D is in providing the ideal 2D/3D/4D environment for true data integration and analysis. Integration of LiDAR datasets with other surface and subsurface information enables fuller examination and understanding of complex systems in their true environmental context. Within CoViz 4D, LiDAR can easily be combined with geophysical, geological, and geochemical data, including:

- 2D, 3D, and 4D seismic reflection data
- 3-Dimensional earth models (stratigraphy and fault geometry)
- Isosurfaces and 3D property models (plumes, aerosols, viewsheds)
- Topographic/digital elevation models (DEM)
- Satellite and aerial imagery
- Roads, pipelines, cables, infrastructure locations
- Ground-water monitoring well locations
- Geochemical measurements
- Any ASCII data in XYZ Cartesian space

Jacksonville, Florida, Naval Air Station—LiDAR merged with aerial photo. LiDAR data generated by the Florida Division of Emergency Management (FDEM), Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), and Coastal Services Center (CSC). Aerial photo from the Florida Division of Emergency Management, 2007.

Point Loma, California—LiDAR merged with aerial photo. LiDAR data generated for the Scripps Institution of Oceanography by the Center for Space Research, the University of Texas at Austin (CSR), with support provided by the Bureau of Economic Geology, the University of Texas at Austin (BEG), and the Government Flight Services of the Texas Department of Transportation. Aerial photo from the Joint Airborne Lidar Bathymetry Technical Center of eXpertise, 2008.