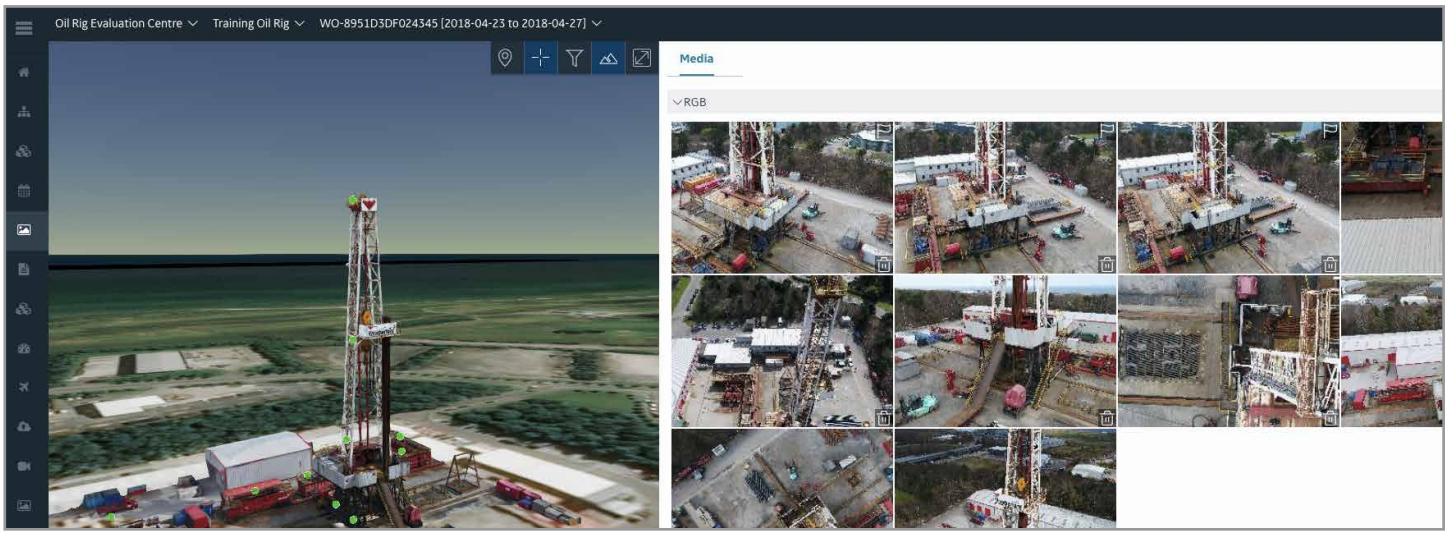
Avitas Systems
a GE venture

3D MODELING
Technology Introduction



Avitas Systems creates 3D photogrammetric and LiDAR asset models through aerial- and ground-based data collection. The spatial information and measurement capability of 3D asset models with point-and-click functionality supports planning of follow-up inspections and maintenance activities. This includes insulation removal/reinstallation, scaffold building, and rope access activities. 3D models can also be integrated with other data sources, including location-based work order systems and augmented reality platforms.

DATA COLLECTION

Avitas Systems uses unmanned aerial vehicles (UAVs), ground vehicles, and human-carried ground collection systems to collect RGB, LiDAR, and infrared data points to create digital 3D models of industrial assets. Photogrammetry works the way many cameras enable panoramas by stitching together overlapping photos into 2D mosaics; photogrammetry advances that process by estimating X, Y, and Z coordinates for each pixel of an original image as it moves through 3D space. Similarly, LiDAR works like radar but uses light waves to send pulses of laser light to surfaces measuring the time it takes to return to create 3D models. Measurement of assets within the 3D model is to ¼" accuracy.

AVITAS SYSTEMS PLATFORM

Avitas Systems develops point cloud/photogrammetry image datasets for 3D models, ingests the models and the individual images, assigns metadata to each, and organizes them by site. The 3D models are available for use in the cloud-based Avitas Systems Platform.

The platform enables RGB, IR, OGI, laser-based chemical sensing, and ultrasonic measurements to be overlaid on the 3D model. Artifacts from historic inspection and maintenance activities can also be overlaid on the 3D model.

Features include:

- Point cloud/photogrammetric 3D modeling of assets, plot plans, and process flow diagrams
- Easy "point and click" navigation of high resolution images and other data from 3D models for more information on a specific point of interest
- Single point of information management for assets: cloud-based storage, cataloging, and digital access, image, video, PDF
- Semi-automated, customizable reporting

ANALYTICS INTEGRATION

The Avitas Systems Platform enables data fusion and analytics using multi-modal data, as well as change management, comparing current conditions to historic. The 3D models support Avitas Systems's deep learning-based techniques for automated and assisted defect recognition for visual and thermal imagery and videos, radiographs, ultrasound, and laser scans. Analytics results can be overlaid on 3D models, enabling visualization of complex data.