FUGRO VIRTUAL WORLD

Enhanced management of power transmission and distribution networks through remote asset investigation, network condition assessment and performance monitoring.

HOSTED ASSET MANAGEMENT
Fugro Roames hosts an asset simulation environment for use by infrastructure managers to investigate and monitor the condition and performance of their network.

Our unique approach combines innovative mapping techniques with cutting-edge data processing and cloud computing capabilities to deliver a complete and accurate 3D virtual model of a power company’s assets. Understanding an assets evolving context, managers can tune their capital and maintenance programs and operational incident response to reduce operational risks and costs, while improving customer service.

Using an accelerated mapping approach, imagery and 3D data is collected over the network’s assets on an annual basis and processed in the cloud. The resulting 3D engineering quality model of the complete asset network reveals the surrounding natural and built environment, enabling comprehensive management services and critical infrastructure condition evaluation.

Through web-based reporting and visualisation tools, Roames allows users to remotely inspect and evaluate features, reducing the risk and investment associated with performing large-scale, ongoing inspections. Roames’ virtual-based intelligence can provide a 40% annual savings relative to traditional asset management costs.

Roames vegetation management services include all specified levels of vegetation from tree down to shrub.

Roames generated height map.
Roames identifies the network and classifies conductors by voltage, which enables varying risk profiles to be defined. Pictured is the Roames modeled network visualisations with the High Voltage (HV) lines identified in red, and the Low Voltage (LV) in green.

CLOUD DELIVERY
Roames provides end-to-end data capture, storage and cloud delivery services eliminating the need for terabytes of server space. Our spatial data is presented in an interactive, 3D visualisation environment using Google Earth layers or through an existing client GIS system. Web-based delivery removes the dependency and risk for in-house sourcing and management of spatial and big data specialists, as well as the associated capital investment and ongoing operational overhead.

SUBSCRIPTION SERVICES
Asset management services provided through Roames monthly subscription include the following:

Network Model – A precise and complete 3D electricity model of every pole, wire and circuits with connectivity and network voltages. Consistent and reliable modeling of the full LV network including customer service wires. The model provides complete asset attribute and measurement data including all distances (wire lengths, pole and attachment point heights, circuit configuration etc.). Roames asset matching capabilities automatically match the real world network to a GIS network.

Vegetation Management – Our vegetation management services include full assessment of all vegetation (trees, shrubs and scrub) against a utilities’ specific business rules; complete risk assessment using regrowth with vegetation analytics and desk-top scoping solution; provision of annual contractor audits ensuring compliance; modeling of every individual tree including its annual growth and proximity to the powerline.

Conductor Clearance – Monitoring of every conductor’s clearances (ground, road, rail, rivers, driveways, buildings) for object separation and interaction to manage risks associated with collision avoidance, clearance compliance, safety approach distances, or electrical ionisation. Modeling accounts for the moving of objects including swinging and thermal expansion.

Structures – Individual assessment and condition tracking of each reconstructed virtual world asset object for movement and distortion (pole verticality, cross-arm bowing, conductor attachment), mechanical loading (pole top), and ground subsidence (erosion around the asset and in the powerline corridor).

Energy – Improved energy forecasting and modeling of customer premise consumption requirements that assess alternative energy supply strategies by merging existing energy modeling algorithms with new parameters from its virtual world such as the size and aspect of buildings, the existence of PV cells and solar hot water systems.

Asset Condition Assessment – Condition and defect risk based assessment of every pole, cross-arm and hardware, insulator, attachments and mounted equipment from environmental related asset deterioration including corona and thermal radiation, moisture, dust, corrosion, lighting surges, electrical arching.

Asset Identification and Inventory - Independent rebuilding of key asset registers with precision physical models and classification suitable for asset valuation, bill of material management, operations modeling and financial modeling.
**BENEFITS**
Roames virtual world services offer the following benefits:

- **Annual cost savings of up to 40%** relative to traditional costs through reduced or eliminated infield inspection cycles, early defect discovery and preventative maintenance approaches, optimised strategic responses and work plans.

- **Standardised asset management practices** network-wide through the consistent application of client specific business rules, and risk based assessment and responses.

- **100% annual audit of a network status**, completed contractor works and asset condition rectifications ensures full network compliance.

- **In-situ 3D network models complete** corporate information systems with precise asset locations, missing network and asset attribute data which enhances internal processes and drive efficiencies across departments.

- **Eliminates millions of kilometers of ground travel per year** associated with infield inspection, audit, information collection and investigation significantly reducing the risk exposure, safety incidences, and environmental footprint.

- **Removes ambiguity of spatial inaccuracies** and establishes a common dataset that enables infrastructure providers in the same region to securely share and exchange asset details.

- **Reduces costs associated with infrastructure management, storing, accessing and processing data.**
A COLLABORATIVE APPROACH

Remote asset management is becoming the best practice standard to ensure safe, reliable, and compliant networks and to achieve business efficiencies with affordable network access. By using virtual world asset management systems, organisations can view the health and status of the entire network in near real-time to remotely implement cost effective and optimised asset management practices. Roames services promote and enable a collaborative approach to asset management through:

- Multi-owner cost sharing of primary inspection tasks.
- Inter-owner collaboration and hence improved alignment in critical infrastructure planning and establishment of regional priority infrastructure plans.
- Multi-agent incident response alignment allowing a single trusted view of an incident response area.

APPLICATIONS

The market for Roames Virtual World extends well beyond infrastructure and asset management applications to a wide range of industries and applications, including insurance, construction, transportation, property and natural resource management.

Roames provides the tools required to inexpensively visualise and analyse widespread 3D assets on a scale measuring millions of square kilometres. Implementing Roames results in:

- Improved planning and operational performance.
- Reduced risk thus improving affordability.
- Accelerated response to emergencies or natural disasters.
- Increased safety near dangerous infrastructure.
- Reduced field visits.
- Decrease environmental impact.

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