IoT WoRKS™ by HCL Technologies

HCL

Geospatial Linear Asset Management solution

Remotely monitor your energy transmission and distribution systems

Business Drivers: High Operational Costs & Penalties

1

- Declining operating margins of utilities and O&G businesses
- Increasing operational and human costs of inspection in dangerous terrain
- Losses from hazards due to vegetation management & outages post calamities

Operational Challenges

- Usage of helicopters for inspection can be quite expensive ($4K/day) and some recent accidents have led to additional liability issues

2

Penalties from wildfires caused due to vegetation encroachment on high power T&D lines can reach up to ~$30 Bn+ in damages and maybe even leading to bankruptcy filings

*The Guardian

Regulatory Impact

- Regulatory landscape changing every day, making it critical to ensure proper maintenance of linear assets

3

Natural calamities causing outages or disruptions in a specific area in the T&D network, or along gas pipelines can result in long outages, downtimes and impact customer satisfaction

*The Guardian

Customer Satisfaction

- Customer expectations have risen dramatically supported by socio-economic shifts in demographics and lifestyles – reliable “always on” electricity is a minimum qualifier

“US Utilities spend about $6Bn - $8Bn annually for helicopter and ground crew inspection and maintenance of T&D lines”

“While 73% respondents in a survey of Utilities organizations say that extreme weather can affect operations and safety, only 24% believe they are well prepared to handle outages”

*Power Mag

This creates a compelling need to relook at outmoded human driven inspection costs for linear assets that can be dangerous, inefficient, expensive and painstakingly slow. Technology today offers alternative cost effective and agile options.

*S&C’s 2018 State of Commercial & Industrial Power Reliability Report with Frost & Sullivan

Accelerating the pace of IoT adoption to achieve a transformed state

THINGS

CAPTURE DATA AND IMAGERY

- The asset is **IoT-ized** through capture of images from UAS devices (drones / Satellites / Planes), transforming the image into a source for contextual data that can be analyzed and correlated further

PEOPLE

ANALYZE INSIGHTS TO DRIVE SHIFTS IN PEOPLE PRACTICES

- Insights are converted to “ACTIONS” through utility-specific workflows, and seamless integration to enterprise systems such as work order management, job prioritization and scheduling
- Context-specific imagery embedded to the work order along with GIS coordinates and terrain data for informed access and improved safety

DATA

ANALYTICS AND AUTOMATION

- Processing, storing, discovery and exploitation of geospatial data at scale
- Ability to ingest imagery, LiDAR, thermal and other forms of remotely sensed data to analyze asset infrastructure.
- Quickly locate critical intelligence with advanced discovery and filtering capabilities enabling informed decisions with a high degree of confidence.

PROCESS

DELIVER ACTIONABLE INSIGHTS USING AI/ML/DL

- Extract accurate and meaningful information from any type of remotely sensed data, including image classification, multi and hyperspectral analysis, and LiDAR feature extraction.
- Advanced deep learning technology focused on extracting insights using standard libraries designed to detect common anomalies on T&D infrastructure, new classifiers can be developed with specific data collected

The true value of IoT is realized when transformation is inclusive of DATA, THINGS, PEOPLE **and** PROCESSES.

GLAM Solution Overview

Value – Key selling points

- Accurate, economical, remote monitoring of linear assets in the energy distribution network
- Enable safe, consistent and reliable service delivery to end customers

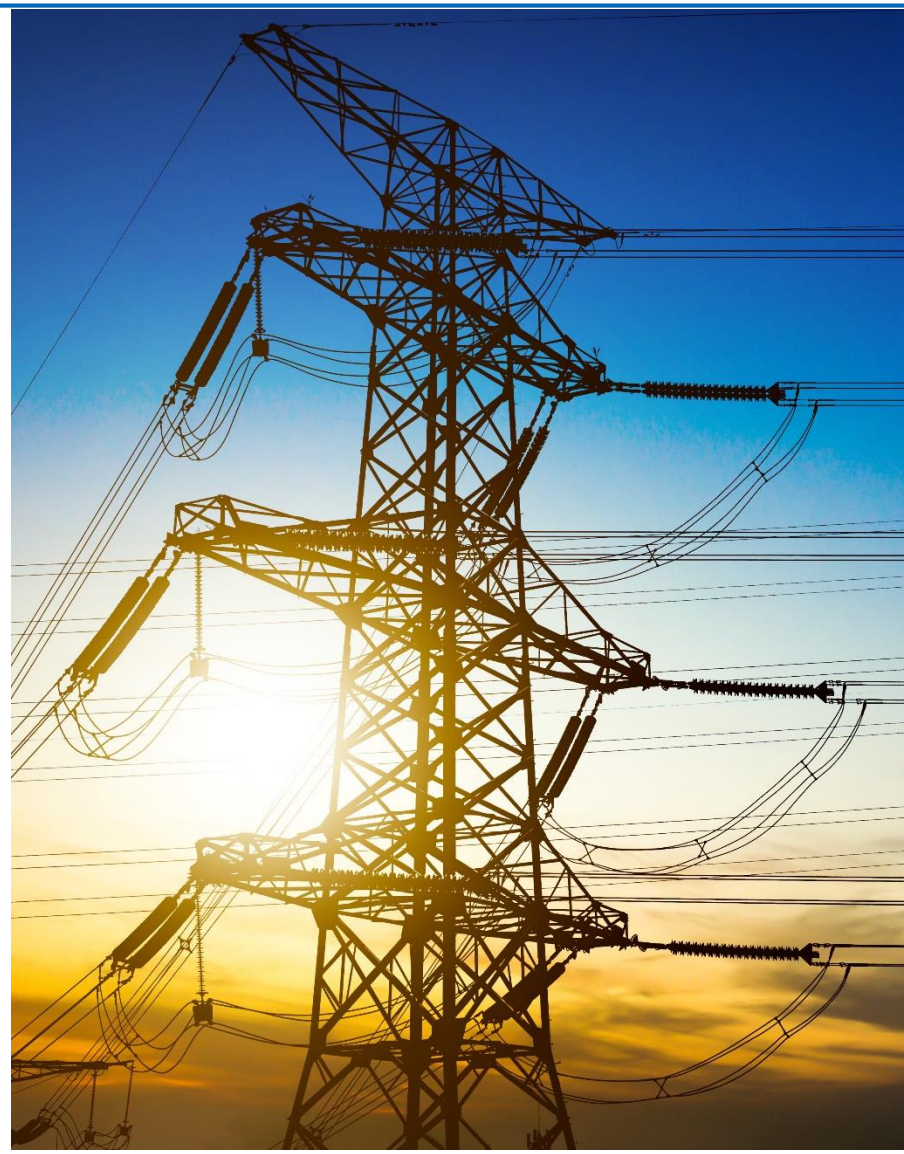
Target Industries

- Energy & Utilities
- Oil & Gas

Electrical Distribution System Operations Head | Electrical Transmission System Operations Head | Customer Service & Operations Officer | COO | CTO | CIO | Power Systems Manager | Power Distribution Engineer | Projects & Technology Officer | Integrated Gas & New Energies Director | Health, Environment & Safety Officer | Strategy & Sustainability Officer | Upstream, Downstream & Midstream Officers

Solution Description – About the Solution

AZURE powered Geospatial Linear Asset Management (GLAM) solution by HCL, leverages drone-captured aerial imagery (LIDAR, Radar, Satellite, Optical and Infrared), image analytics, deep learning and geospatial insights to transform traditional and costly linear asset (pipelines, T&D lines) inspection methods. The solution, developed with our partner, taps into a deep learning platform built on top of a GIS layer, rapidly processing satellite, drone and LIDAR imagery of linear assets and providing precise, real-time, actionable insights that remove errors, dependencies and dangers associated with human inspection – enabling round the clock vegetation management, site assessment, better planned workflows and outage responsiveness – resulting in safe, consistent and reliable service delivery to end customers.



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