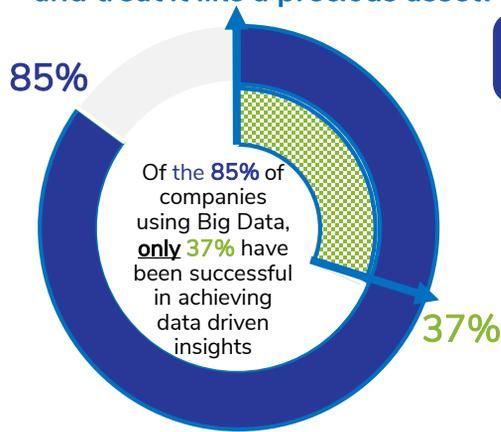


Data Governance: Managing Data as an Asset

Improve Data Quality & Analyses to Drive Insights and Accelerate Action

In today's technology era, data assets are considered to be some of the most valuable in helping companies to improve decision making, better serve customers, reduce costs, and ultimately, increase revenue and profits. Does your company actively manage, enrich, and analyze its data and treat it like a precious asset?



REALITY

Most companies have failed to extract any significant value from big data investments. Primarily, this is due to lack of insight into the linkage between data, asset risk, and functional performance.

WHY UMS GROUP

We like to add value as a strategic partner - an external data analytics expert and consultancy with broad industry experience in helping utilities adapt and drive sustainable change. By combining common data sets with advanced analytical tools and methodologies, UMS Group acts in a data enrichment capacity – auditing, collecting, correcting and creating data as needed by each critical decision or use case, always at a faster path to value and at a much lower cost than alternative Big Data software solutions.

COMMON DATA GOVERNANCE CHALLENGES



Handling Large Amounts of Data is Difficult

Data volumes are continuing to grow and analysis possibilities are nearly limitless. However, the scale of data often exceeds what can be easily stored, computed, and retrieved, and many organizations struggle with what to do with the data or where to get started.



Integration and Data Transformation is Still a Challenge

Integrated views of data across various systems and layers to support decision making often require a series of queries, joins and exports. Likewise, data is often in slightly different formats and requires some degree of transformation, which can be a very time-consuming process.



Data Silos Still Exist and We Have Not Yet Achieved Full Data Democratization

A major theme emerging in the utility industry is de-risking assets. Breaking down these silos ("Data Democratization") and improving data quality results in dramatic increases in analytic and reporting speed, which creates a virtuous cycle for extracting value.



Data Quality Issues Persist and Data Needs Enrichment to Effectively Drive Decision Making

Data sets must often be integrated with advanced analytic tools and enrichment methodologies (i.e., auditing, normalizing, correcting, synthesizing and creating data proxies as needed).



There's a Shortage of Skilled People (Data Scientists, etc.)

Management feels the urgency, but Data Scientists/Analysts without industry expertise are not the answer. They create the illusion of progress but in fact dilute insight & model development. Training people at entry level is also expensive and slow. Light-weight analytic platforms with ubiquitous access for SMEs is the solution.



Real-Time Can be Complex – Know When it's Really Needed

Depending on the application and use of data, integration/updates may only be needed daily, weekly, or even less frequently for sufficient insights. Avoid extra complexities when real time integration isn't truly necessary.

Data Governance: What UMS Group Can Do For You

We believe that certain core principles drive successful data governance:

Specific benefits derived from better data governance, cleansing, and enrichment:



- ✓ Recognize that **data is one of your company's most important assets** --- if put to use properly!
- ✓ **Data ownership and accountability** must be clearly defined.
- ✓ Data for the sake of data is almost meaningless. The **"right data" must be collected**, and in most cases, the **data must be cleansed, transformed, and/or enriched** to support meaningful insights.
- ✓ Value is achieved by understanding linkages between data, asset risk, and functional performance. **Data has little value unless it is linked to a decision that will create value!**
- ✓ Wherever possible, leverage **diagnostic and prescriptive data analytics** to better understand where you are today and to provide data-backed insights and decision support.
- ✓ **Harness predictive analytics**, including statistical algorithms and machine learning techniques, to improve your identification and understanding of the likelihood of future outcomes or events.

Because we are known for our lightweight operational and predictive analytic applications and benchmarking services, we understand the importance of "good" data. We have expanded our service offerings to help companies achieve better data governance, with the initial focus on data cleansing and enrichment.

WITH ANY UMS GROUP DATA GOVERNANCE PROJECT, YOU CAN EXPECT TO:

IMPROVE DATA QUALITY: Our data services team will work to identify outliers, anomalies and suspect data, and wherever possible automate the process of data cleanup through alerts, which highlight suspect events from the prior day and send them to operations for immediate validation and correction. We also focus on data enrichment initiatives to fill in data gaps or create entirely new datasets, such as collecting transmission structure elevations, generating substation fence shape files, and creating a spans database.

REDUCE COST AND EFFORT OF DATA MANAGEMENT: Most utilities either have dedicated (and costly) resources focused on data validation and clean up or simply wait for data anomalies to be discovered and corrected by analysts in the course of their work. The former is very costly in O&M dollars and not always reliable. The latter is far less effective, as correcting bad data, sometimes weeks or months after the error was made, is often impossible, leading to even more costly bad decisions. UMS Group's data solutions support comprehensive and timely data governance, with automatic data anomaly detection, alerts and suggestions for corrections.

ACCELERATE CORRECTIVE ACTION: We will help you to deploy automated data validation and cleanup of outage, asset and customer data. This could range from routine periodic validation tests of essential data sets, to daily validation tests and notifications to the associated initiator of each data record, to short and mid-term outlier identification, to longer-term analysis and anomalous pattern identification. The sooner data is corrected or refined and able to be deployed in prescriptive and predictive analyses/applications, the faster AND better data driven decision making can be made. We will help you use key data insights to take action!





Case Study: Transmission Line Span Asset Register Development



COMPANY: A regulated, investor-owned utility in the western US, serving over 5 million customers.



OVERVIEW: Many utilities have structures in their GIS, with long lengths of conductors (wire from splice to splice), but are missing assets called “Spans” (parts of conductors). This is a critical gap because much of the risk of these assets lies in the interface between the line and the ROW (vegetation) below it, something unique to each span.



METHODOLOGY: In 3 short weeks, the UMS Group Data Services team created a new asset class consisting of more than 148,000 transmission line spans.

- Initial “spans” were derived from database of transmission structures. Structures were sequenced and span length calculated as span attributes. Long spans were investigated with satellite imagery to ID missing structures.
- We brought other attributes into this new span data set, such as conductor characteristics, # of splices, spacers, dampers, aviation marker balls on each span, river and highway crossings, etc.. Note: Any attribute can be joined to this span table for analysis.
- This work was completed by utilizing a custom BI application which aided in quick calculations using large data sets (i.e. 148k structures), mapping visualizations, and geospatial analysis to utilize geolocation / lat-long data.



DATA UTILIZED: Structure database / sequence, circuit guest/host relationships, OH Line shape files, OH conductor attributes (type, size, age, etc.), child asset data sets (e.g. geolocations of splices, spacers, and marker balls)



CHALLENGES: Data quality and data availability were the two biggest challenges.

- Data Quality: duplicate data, missing data, incorrect sequence numbers, incorrect/outdated structure IDs, incorrect Lat/Long coordinates
- Data Availability: the table of structures existed all along, but the sequence numbers associated with each structure did not. Data also didn't exist to indicate which “branch” of a multi-directional/split Tx line the structure existed on – a methodology to deal with / automate this had to be developed.



SUCCESSES: UMS Group built a comprehensive database of 148,000 transmission line spans in less than 3 weeks and delivered it to the client for upload as a new layer in GIS. Establishment of this asset class was a significant step forward for this utility, allowing more effective asset risk management, as well as development of condition assessments, lifecycle strategies and risk profiles for each transmission span. We were able to:

- Document conductor risk (i.e., asset criticality and condition) on each span
- Assign to each span ROW Clearance attributes, structure heights, span midpoint elevations, conductor mid span sag as function of circuit load and ambient temperature/wind speed to measure veg management risk
- Link asset condition and veg exposure to consequence (river and highway crossings, schools, etc.)

The client realized that they could not adopt an effective risk-based approach to prioritization of inspections and veg management without data on this critical missing asset class.

Sample visualization of a client transmission line – showing each structure and its sequenced path, overlaid with an OH line shape file. This is used primarily for checking for data quality issues. Sample data with span length are shown as well.

