Dynamic Risk

dynamicrisk.net
info@dynamicrisk.net

INSIGHT HUB

Data Quality Assessment

A comprehensive solution using advanced predictive analytics for improved data quality management and analysis.

As a pipeline operator, assessing the quality of your system's integrity data is a critical task which not only must be undertaken to comply with regulatory requirements, but is also foundational to a successful pipeline Integrity Management Program.

For years, pipeline operators have used a variety of methods to integrate and analyze integrity datasets to produce actionable insights. When it comes to assessing datasets, any inconsistency or variation, or the presence of default or null values, diminishes the accuracy of, and confidence in, analytic results.

Finally, integrity data comes from many different sources and can vary both in format and vintage. For data spanning multiple file formats, vendors, operators, and time periods to be useful and effective, it must be categorized and normalized before it is assessed, and appropriate analytic tools must be employed.
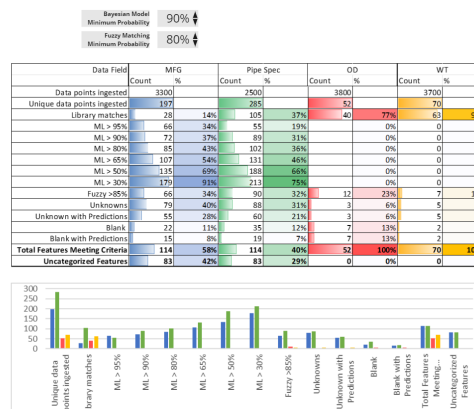
Predictive Analytics for Data Quality Assessment

Data Quality Assessment is an analytic solution used to index and normalize data using integrated machine learning models, logic gates, and the extensive Insight Hub Subject Matter Expert (SME) Data Library. It provides the foundation for the development of Integrity Management Programs related to pipe populations and quantitative risk assessments. It enables users to perform automated mapping and data quality analysis for pipeline attributes, materials, and operation data using a broad and consolidated dataset of detailed available oil and gas pipeline information.

The Data Quality Assessment tool matches incoming data to known values in the "hub" and assigns confidence ratings for each match. It also recommends the most likely values for missing or unknown data fields found in the dataset with probability scores, based on relative confidence. These matches and recommendations are appended to your own dataset, preserving the original values so no data is overwritten or lost, facilitating the transfer of information between our system, and yours. Our team of Integrity SMEs reviews findings and makes data quality recommendations based on your specific business objectives and goals.

Augmented by Dynamic Risk's extensive industry domain knowledge and expertise, these powerful new automated systems use a streamlined approach to ensure the uncovering of accurate, relevant, and actionable insights. Now your Asset Integrity teams, Risk Analysts, and Data Management personnel can leverage integrity data outside of their own domains to better categorize and quantitatively assess the quality and completeness of their datasets. Operators receive immediate benefits through insights on where to prioritize high-impact activities and initiatives, thereby reducing the time and resources often spent manually performing such tasks.

Data Quality Assessment

Date: 2023-01-27
Projects: Test Projects 1a

Total Rows Ingested: 100,000
Total Columns Ingested: 92
Total Date Elements Ingested: 9,200,000
Unique Values Ingested: 25,000

Bayesian Model Minimum Probability: 90%
Fuzzy Matching Minimum Probability: 80%

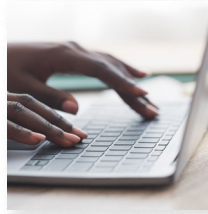| Data Field	MFG		Pipe Spec		OD		WT	
	Count	%	Count	%	Count	%	Count	%
Data points ingested	3300		2500		3800		3700	
Unique data points ingested	197		285		52		70	
Library matches	28	14%	105	37%	40	77%	63	90%
ML > 95%	66	34%	55	19%		0%	0	0%
ML > 90%	72	37%	89	31%		0%	0	0%
ML > 80%	85	43%	102	36%		0%	0	0%
ML > 65%	107	54%	131	46%		0%	0	0%
ML > 50%	135	69%	188	66%		0%	0	0%
ML > 30%	179	91%	213	75%		0%	0	0%
Fuzzy >85%	66	34%	90	32%	12	23%	7	10%
Unknowns	79	40%	88	31%	3	6%	5	7%
Unknown with Predictions	55	28%	60	21%	3	6%	5	7%
Blank	22	11%	35	12%	7	13%	2	3%
Blank with Predictions	15	8%	19	7%	7	13%	2	3%
Total Features Meeting Criteria	**114**	**58%**	**114**	**40%**	**52**	**100%**	**70**	**100%**
Uncategorized Features	**83**	**42%**	**83**	**29%**	**0**	**0%**	**0**	**0%**

Benefits

Resource Industry Expertise

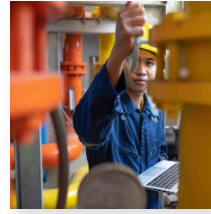Data analysis and validation performed by a team of pipeline integrity experts

Optimized Risk Reduction

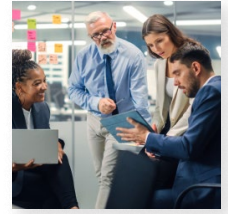Proactive approach to determine potential threats and develop associated mitigation activities

Improved Reporting & Analysis

Trust and confidence in data and analysis for accurate reporting

Improved Operational Performance

Decreased time and operational expenditure to focus resources on highest priority activities

Single Source of Truth

Leveraging of reliable, consolidated information to make the best-informed integrity decisions

About Insight Hub

Dynamic Risk has partnered with a growing number of pipeline operators to compile the vast amount of their available pipeline asset data within our Insight Hub which comprises pipeline and integrity data for over 140,000 km of pipe ranging from large diameter/Transmission pipelines to small diameter and/or Distribution systems from pipeline operators throughout North America. This wealth of data enables the development of advanced analytic tools that leverage the Insight Hub dataset to predict and quantify the expected performance of pipeline assets and the confidence of those predictions.

Insight Hub participants benefit from access to quantitative and predictive analysis built on an anonymized data repository many times the size of any single pipeline system. Users can benchmark pipeline reliability and performance data against a collection of comprehensive integrity data that is unique in its size and scope.

Why Dynamic Risk?

Our team of industry experts, data scientists, and analytics specialists, supported by the industry's largest, most comprehensive pipeline data warehouse, together enable you to plan the best path forward for the health and safety of your pipeline infrastructure.

Contact us today to learn how Insight Hub and our advanced Data Quality Assessment can maximize the value of your integrity budget by creating a thorough Asset Management Plan to measure performance, optimize risk reduction, and decrease operational spend.

Dynamic Risk is part of Previan, a fast-growing, innovative, and private industrial technology group focused on advanced diagnostic technologies to monitor the world's infrastructure health. The Group serves asset owners, large engineering firms, and service companies globally in markets such as Aerospace, Civil Infrastructure, Energy, Mining, Power Generation, and Rail. Via sensors, hardware, robotics, and software, Previan makes a safe and sustainable future possible, by pushing the limits of diagnostic technologies that preserve the integrity of our world's critical infrastructure and assets.

More information can be found on the company's website: www.previan.com

Canadian headquarters
#1200, 333 – 11 Avenue SW
Calgary, Alberta, T2R 1L9
(403) 547-8638

USA headquarters
15500 International Plaza Drive
Houston, TX 77032