DSS

Data Science Service

GKM Consultants' DSS solution is a core part of our solutions for Asset Loss Prevention Programs (Dams, Bridges, Railways, Pit Wall, Tunnels, etc.).

In addition to helping with the selection of the right hardware and software solutions, GKM Consultants assists with the management of "Big Data" and provides data science support services such as: data cleaning, data exploration, data visualization, feature engineering and predictive modeling to allow end-users to understand, visualize and take action based on data they can trust in order to properly manage company assets.

Why use our Data Science Service?

Proper analysis of data will ascertain that the collected data meets the needs and objectives of the project. With over 15 years offering Premium Asset Monitoring Services, the GKM team understands monitoring data and can identify discrepancies and inconsistencies in data sets. Sound data allows for proper interpretation, feature engineering and predictive modeling, simplifying the work of designers/managers in planning maintenance programs and taking corrective action where required.

Data Science Life Cycle

1. BUSINESS UNDERSTANDING
2. DATA MINING
3. DATA CLEANING
4. DATA EXPLORATION
5. FEATURE ENGINEERING
6. PREDICTIVE MODELING
7. DATA VISUALIZATION

The DSS solution contributes directly to Asset Loss Prevention Programs within a continual improvement framework where modifications can be implemented based on lessons learned.

Owners and managers can find peace of mind, knowing that they are better protected from asset loss because data has been properly collected, understood, analyzed and distributed. The volume of data and the rate at which "big data" is produced can be daunting without the specialized knowledge required in today's asset monitoring industry. GKM Consultants offers this expertise, at the confluence of data loggers, sensor connectivity, database management and online reporting.

If the right steps were not taken from the start, trust in the data can be irrevocably lost. Direct benefits include identifying faulty methods that could require additional training of field staff, faulty hardware that can be actively maintained, easier integration with production data and long-term traceability for studies or expansions as needed.

2141, Nobel Street, Suite 101, Sainte-Julie (Québec) Canada J3E 1Z9   T : 1 450 441-5444   F : 1 450 441-0677   info@gkmconsultants.com

GKM Consultants
gkmconsultants.com

How does it work?

Asset owners should dedicate their resources on an asset monitoring program that produces high-trust data. To achieve this goal, GKM Consultants will proceed according to the standard data science life cycle.

▼ 1 - Business Understanding | 2 - Data Mining | 7 - Data Visualization

The "basic" or "first-pass" versions of these 3 steps of the data science life cycle are typically addressed at the start of every project. The data science life cycle is an iterative process of continuous improvement. The basic versions of these 3 steps may all be revisited based on the outcomes of steps 3 to 6 below.

▼ 3 - Data Cleaning

The previous **2 - Data Mining** process is sometimes conducted automatically or by inexperienced personnel which can lead to errors, inconsistencies or missing values. Data Cleaning removes these anomalies, providing a data set that can be trusted for further interpretation.

▼ 4 - Data Exploration

By exploring the trends and correlations within the data, it can be shown whether or not the objective of the asset monitoring program is actually attained.

▼ 5 - Feature Engineering

Upon confirmation that the asset monitoring program objectives are actually met, it becomes possible to select important trends or features of the data to construct more meaningful trends or features thus providing continuous improvement to the program.

▼ 6 - Predictive Modeling

In some cases, it is possible to analyze key trends and predict future measurements in the case of steady-state conditions, expansion programs, corrective maintenance or design modifications to help guide decisions and actions concerning the asset being monitored or even the bigger site area.

The clients of GKM Consultants are free to select as many or as few of the stages outlined above as required by their project and their Asset Loss Prevention Program. However, GKM Consultants recommends, at minimum, that the data cleaning and exploration steps should be undertaken to ensure that the data is collected, treated and cleaned to confirm that initial asset monitoring objectives are attained.

Technical Information

End users can expect a clean data set that can be trusted by managers and designers in order to make decisions and take action. The core of this service is to identify and report summaries of any errors, inconsistencies or gaps that should be addressed. Each report is custom-built according to the needs identified from the data science life cycle above. The objective of the report is to provide managers/designers with data they can trust and recommendations for continuous improvement to the asset monitoring program. Exploration, feature engineering and predictive modeling sections can be included as needed.

This service does not provide engineering opinions, discussions, conclusions or recommendations concerning the asset being monitored. A qualified representative will be glad to help you make the right choice for your needs.

Contact us to discuss the options available to you at 1 450 441-5444 or by email info@gkmconsultants.com

2141, Nobel Street, Suite 101, Sainte-Julie (Québec) Canada J3E 1Z9   T : 1 450 441-5444   F : 1 450 441-0677   info@gkmconsultants.com

GKM Consultants
gkmconsultants.com