**Empowering Health and Safety at Aurum Mining Corporation (AMC) : A Data-Driven Consulting Case Study**

**Executive Summary**

This business case presents a real-world scenario in the mining industry, challenging participants to develop an end-to-end solution for the Health & Safety business group. The objective is to create a data-driven framework that categorizes future health and safety incidents while enabling stakeholders to evaluate underlying risks. The solution should also guide the organization in building a more data-driven culture to assess the state of health and safety. The key to success lies in helping the client convert their available data to actionable insights.

**Background**

Mining operations face various health and safety risks, and accurately classifying incidents is crucial for identifying potential hazards, assessing risks, and implementing preventive measures. Additionally, AMC management needs to report aggregated Key Performance Indicators (KPIs) to comply with government regulations. However, manually analyzing incident descriptions is time-consuming and prone to subjective interpretations. AMC aims to leverage data and machine learning techniques to streamline incident classification, provide actionable insights to the leadership, and establish a standardized framework for evaluating health and safety across different functions within the organization.

**Problem Statement**

Participants will receive a dataset of health and safety incidents in the mining industry, including incident descriptions. The challenge is to build a model capable of accurately classifying incidents based on their descriptions. The participants also need to provide a framework to evaluate risk from each of these incidents and identify potential focus areas for AMC to focus on to improve the state of health and safety.

**Objectives**

* *Assess the effectiveness of automated incident classification*: Evaluate performance and accuracy of the developed model in classifying health and safety incidents, comparing it to manual analysis and identifying areas for improvement.
* *Streamline the incident classification process and enhance accuracy*: reduce burden on human analysts by automating incident classification, saving time and resources
* *Identify key areas for risk mitigation and improvement*: identify patterns, trends, and high-risk areas, providing actionable insights on where AMC should focus its efforts
* *Drive proactive measures and strategic decision-making*: enabling the organization to prevent incidents before they occur
* *Define next steps for integration*: develop a roadmap for integrating the incident classification solution into AMC's health and safety management system, outlining strategies for continuously refining the model based on new data and emerging risks
* *Maximizing the potential of incident data to drive continuous improvement*: establish benchmarks, and foster a data-driven approach to health and safety in the mining industry

**Deliverables**

* *A comprehensive report*: detailing the approach, methodology, and findings (Refer to the attached slide-deck template for reference)
* *Code scripts and documentation*: showcasing the model development and evaluation process
* *Visualizations and interpretations*: of the incident classification results
* *Actionable Recommendations*: on leveraging incident data for mining leadership.

**Evaluation Criteria**

The submissions will be evaluated based on:

* Accuracy and effectiveness of the incident classification model
* Demonstrated understanding of risk evaluation and mitigation in the mining industry
* Clarity, depth, and quality of the report, including visualizations and interpretations
* Creativity and feasibility of recommendations to make the incident data actionable

**Conclusion**

This business case challenges participants to apply their data analysis and machine learning expertise in the context of health and safety incident classification within the mining industry. It emphasizes the role of a data science consultant who goes beyond the provided dataset, conducting industry research and leveraging all available resources to develop an enhanced solution.

Link to Dataset & template PPT: [Link to resources](https://drive.google.com/drive/folders/1eVF93YuvCN9oy2vq8e6KbpOvSp3XFaNi?usp=sharing)