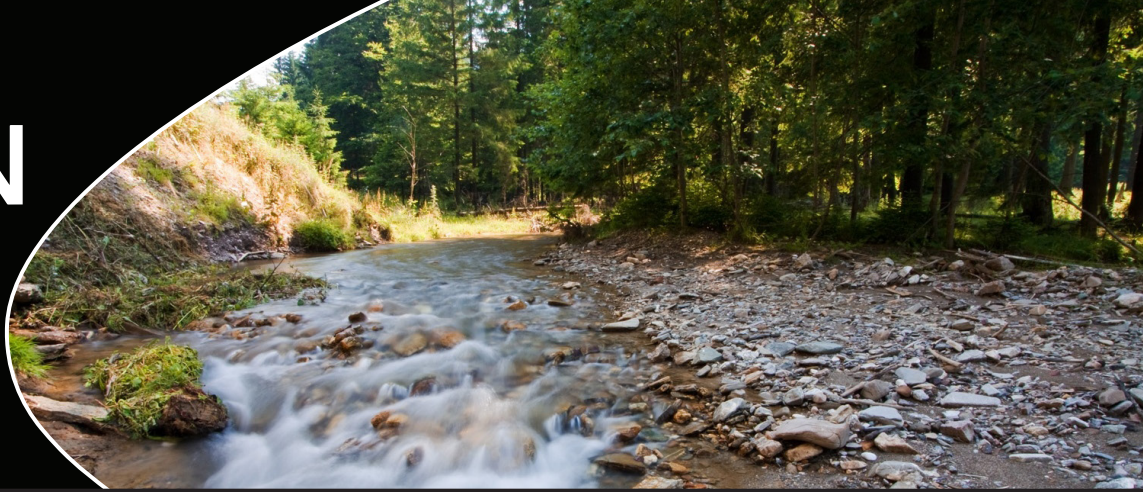# GREENLAND INNOVATION HIGHLIGHT

COMPANY OVERVIEW

In business for more than 25 years, Greenland is an award-winning engineering and technology enterprise providing expertise in storm water management, flood plain analysis, watershed and water quality monitoring and modeling, through information technology and decision support systems.

LOCATION: COLLINGWOOD, ON

TECHNOLOGY

Data Centre and Cloud

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CONVENTIONAL METHODS FOR ENVIRONMENTAL RISK MANAGEMENT AREN'T ENOUGH

Managing environmental risk is a crucial factor in protecting Canadian ecosystems. Whether it's flooding or forest fires, environmentalists and engineers need to forecast potential disasters and ecosystem changes before they happen. Conventional methods are often used in the industry to manage risk, but sometimes they aren't enough. Without enough information or proper analytics, the risks of being blindsided by a catastrophic event increase. In order to assist environmentalists and engineers in risk management, Greenland offers a solution – high quality data analytics.

BRINGING HIGHER QUALITY DATA TO ENVIRONMENTAL RISK MANAGEMENT

Greenland's Integrated Science and Watershed Management System (ISWMS) platform is designed to provide detailed information for environmental risk management. ISWMS provides a predictive service for water hazard risks and integrates it into web-based mapping and analysis tools. Using a mixture of artificial intelligence and machine learning, ISWMS provides users with flooding information including flood prediction, cumulative environmental effects assessments, water quality modeling, and more. The platform takes the data and analyzes it with historical, real-time, forecast, and statistical return period conditions, allowing for model outputs and predictions at a high level of detail and accuracy.

GPU TESTING MULTIPLE MACHINE LEARNING ALGORITHMS

With CENGN's GPU infrastructure, Greenland validated different machine learning algorithms. Both Random Forest and Long Short-Term Memory (LSTM) algorithms were tested and further worked on to improve accuracy. Leaving CENGN, Greenland saved an estimate of $10,000 on testing services and sees multiple use cases for both the machine learning models in a production environment. Moving forward, Greenland will continue to optimize their solution's processes for accessing weather forecast data.

> **"As a result of the CENGN Project, Greenland will be able to provide a more expanded offering of technology for predicting flood and water stress conditions."**
>
> **Trevor Boston**
>
> Project Manager, Greenland