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The Development of a Cost Effective Enterprise Data Management and Visualization tool for Monitoring and Operations Site data on a Web Based Geographical Information System (GIS) Platform

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The costs for managing and reporting data collected for monitoring programs are higher than they should be. Additionally, accessibility to that data should be simpler than it is. These statements appear to be generalizations, however they are accurate. There are a variety of reasons why the cost to manage data is high and unappealing as an investment during a period of time where capital projects are being scaled back. Some of these reasons include:

- Base management software is normally sold in U.S. Dollars, although pricing may not have changed, the decrease in the Canadian dollar adds a significant cost factor, with base costing for an enterprise data management system with spatial capabilities running within a core environment at approximately US$100,000, prior to any development.
- Implementation of these systems along with customizations involves a significant capital investment in the form of base software, customizations, support software and database systems.

As such, the challenge is to determine how to build a robust data management system for a small, but growing company during a period of economic instability. Furthermore, any system developed must be robust enough so as to provide a definitive differentiator within a competitive environmental monitoring marketplace at a significantly lower cost.

In order to address this challenge an Integrated Data Management System (IDMS) was developed that uses a blend of industry standards and open source technologies and practices to significantly reduce costs on technology (up to 75%), while maximizing functionality.

IDMS is a web-based application that enables users to quickly interrogate their site data efficiently. Rather than the focus of data investigation being placed upon either a data or mapping interface, it combines the two, and allows the user to work between them easily. Information is displayed through the most applicable visual mechanism, whether that be a map, table of data, ternary plot, graph, or file. Simple selection tools enable users to quickly interrogate their data to determine if current monitoring activities have exceeded regulatory guidelines or trends exist in water elevations between wells. IDMS is designed not to be a single purpose built application, as the user may be interested in more than a single aspect of their site. In essence the system is constructed off of a flexible data warehouse structure, with industry standard processing capabilities, but includes the capability to expand to meet client needs for sites. This enables data not specifically associated with just monitoring to be housed, accessed and displayed together with other site information useful to clients.

By taking a holistic view to the entire data management, visualization and technology required to present it, the IDMS is designed not only to be extensible, but also provides a variety of site information to users, including monitoring, as well as daily operations data within a visually robust environment. This presentation will provide an overview of the IDMS, as well as show its capabilities and functionalities.

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Gordon has over 20 years of experience interacting with and managing spatial and non-spatial data. Primarily involved within the environmental consulting industry, Gordon understands that a combination of good data management practices leads not only to effective use of information on projects, but also enables clients to leverage it for other purposes. Working closely with project managers, field personnel, clients, laboratories, and vendors, Gordon has helped to establish enterprise systems, standards and processes used for the capture, processing and reporting of environmental monitoring data through its entire lifecycle.