

## **Application Development for Flow Loggers and Flow Meters**

### **The Client**

The customer is a leading provider of water pollution monitoring products and chromatography instruments. The customer looked to a strategic embedded systems provider to outsource application development for chromatography instruments, and water and waste water monitoring products. The objective in partnering with an embedded systems provider was to lower development and maintenance costs for new and existing products, achieve quicker time-to-market, and drastically reduce the total cost of ownership (TCO). In a continuing partnership for over four years, Mindteck's dedicated development team has been developing liquid chromatography and flow measurement applications for the customer.

### **The Challenge**

Our customer's Windows based application connected to a host of water and waste water monitoring instruments such as flow loggers and flow meters. It generated graphs and reports that helped in data analysis. The existing system was a stand-alone application developed on MS Windows with MS Access as the database. There was only one version of the software – and this severely limited end user choices. While the software could connect to a device and request ('pull') data from the device, it could not accept data sent ('pushed') by the device. To stay ahead of competition, the software required advanced data editing and report generating features.

### **The Solution**

Our team developed an advanced flow data management application with plentiful features for analysis, editing and reporting of flow data. The application connected a host of water and waste water monitoring instruments such as flow loggers and flow meters, and provided easy to use instrument configuration options. Special features such as configuration replication helped in quick setup while replacing instruments at onsite locations. Data handling options were easy to perform in every case where data needed to be quickly downloaded onsite to a laptop.

Superior data presentation features facilitated presentation of data in graphs and tables. Easy drag and drop options, and graphs with up to four panes (with multiple data types in each pane) provided complete ease of use in data presentation. Advanced data analysis features allowed users to conduct advanced and streamlined studies, and generated high-level reports. Some of the advanced data analysis features included calculating average, minimum, maximum and total accumulated values; comparing data from multiple sites using series formulas to determine the relation between sites or parameters; comparing flows using the continuity equation and Manning formula. High-level editing features allowed easy editing, even where data quality could be adversely affected by external noise and other site conditions. Data can be edited with constant offset, fixed offset, proportional, time or auto-correct functions. The reporting feature allowed easy inclusion of graphs and tables in MS Word, Excel and PowerPoint. Data could be exported to CSV format for analysis in spreadsheet programs and graphs. Exporting tables into HTML or PDF formats was also possible. The application was built with a high-level licensing system, allowing system configuration based on the type of license purchased by the user. A time-bound access copy was available for users to evaluate the application before purchase. The application supported multiple databases including MS Access, MS SQL and Oracle. The application implemented 'data push' technology where it accepted data packets 'pushed' from multiple devices, translating into remarkable battery savings when compared to the earlier 'data pull' technology.

Mindteck also deployed select features of this desktop application as a Web based application with

user authentication. This enabled customers to access key information from anywhere through a Web browser and view/select graphs, and view graphical and tabular information. The desktop and Web applications supported multiple languages for worldwide deployment.

**The Benefits**

Apart from cost arbitrage, the customer benefited from:

- Mindteck's domain expertise in test and measurement instruments, and Windows applications
- Intermediate releases and stringent quality processes

**The Technology**