TRAINING AND CERTIFICATION MANAGEMENT IN THE CLOUD

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ABSTRACT

The District Municipality of Muskoka is responsible for supplying drinking water and treating the wastewater generated in the municipalities of Bracebridge, Gravenhurst, Huntsville, Port Carling, Mactier, Port Sydney, Port Severn, Bala and Baysville. The District owns and operates ten drinking water and nine wastewater systems. It employs over 50 water and wastewater operators to maintain its day-to-day operations.

The municipalities have the responsibility of ensuring their operators meet provincial regulatory training and experience requirements. Until recently, the District of Muskoka relied on a home-grown desktop software, spreadsheets and paper reports to keep track of operator's training, certification, experience and work hours. That process was cumbersome, labour intensive and time consuming.

Furthermore, the legacy system was running on end-of-life technology. The Operation team was facing a business exposure of conducting business on unsupported software. It also presented a challenge on system maintenance and non-conformance to stringent District IT standards. The District recognized the needs to improve business automation, efficiency and collaboration. With urgency, the District Management had to come up with a solution which will eliminate the exposure and deliver critical improvement within a tight budget constraint.

This paper describes the process and lessons learned in transforming from a paper based manual operation to a fully automated and digitized operation.

THE PROJECT

In 2016, the District of Muskoka set out to modernize their training and certification tracking system with a focus on a holistic management tool to enhance their existing Drinking Water Quality Management System (DWQMS) in the long term. The project started with an internal review and need analysis. The District identified key areas of the modernization project as, process automation, partner ecosystem and business analytics. After an extensive search, the District selected a cloud-based services platform, referred to as the Compliance system, to replace the legacy training system.

PROCESS AUTOMATION

A key challenge that the District faced was a labour-intensive and error prone process of managing operator training and compliance with the regulatory requirements for licence renewal and upgrade. With 300 on-the-job and continue education training events conducted a year, the District of Muskoka had to handle over 1500 training records and paper course certificates. The training records were maintained in various databases and spreadsheets. The paper certificates and documentation are scattered in file cabinets or individual's emails and computers. The manual compilation of training achievement was cumbersome, time consuming and error prone.

With the new Compliance system, all stakeholders can now quickly access training records, certificates and documentation from one central database. Trainers and participants are notified by email with course schedule, details and materials. The trainer enters the attendance and uploads course certificates and documentation electronically. The training hours are automatically accredited to the participants. It has streamlined the training process and eliminated the manual tasks associated with the paper records.

FIGURE 1. SCREENSHOT OF THE ATTENDANCE & CERTIFICATE ENTRY WITHIN THE COMPLIANCE SYSTEM

Automatic licence renewal and upgrade

The current water and wastewater operator certification is a tedious paper based application. The Compliance system has fully automated licence renewal and upgrade applications with consistency, accountability and compliance. The Compliance engine validates the operator's

acquired training hours; OIC and operating experience with the renewal and upgrade requirements of specific type and class of the licence. With one click, the system auto-fills the licence application forms and generates a submission package with all the required reports and certificates. The District no longer struggles with lengthy preparation and only spends fraction of the time used on preparing and filing renewal and upgrade applications to MOECC.
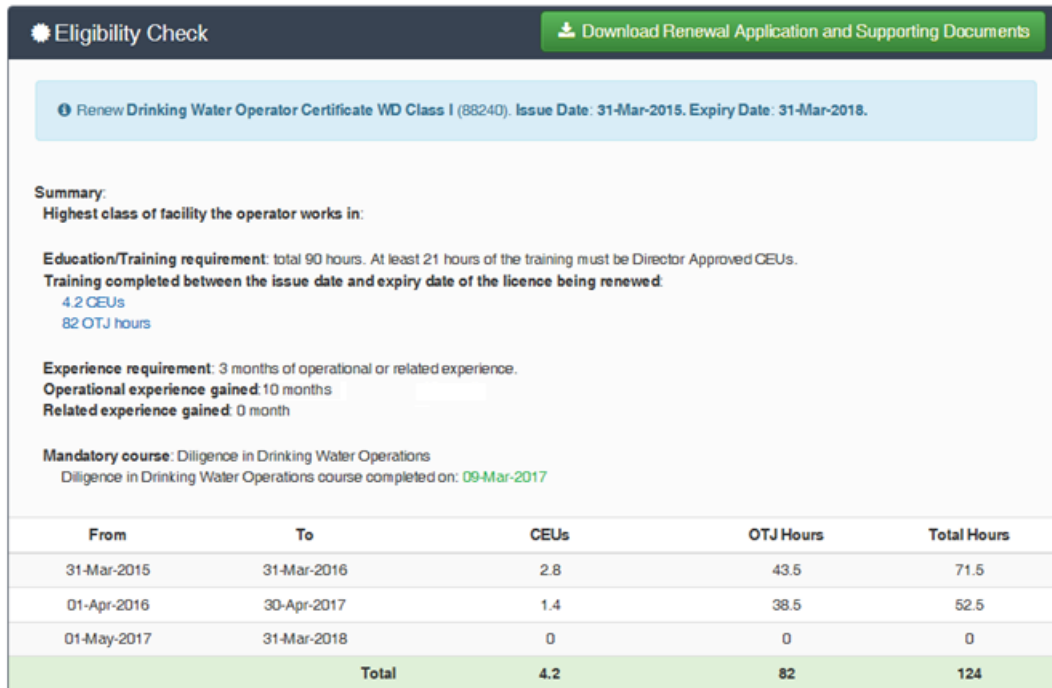

FIGURE 2. SCREENSHOT OF RENEWAL ELIGIBILITY WITHIN COMPLIANCE SYSTEM

PARTNER ECOSYSTEM

The Compliance system links the training and certification community together in an ecosystem aiming to facilitate interactions with each other for the best outcome. The District of Muskoka found significant efficiency gains through connecting with its business partners on the Compliance system platform. The Compliance system provides internal and external training providers the ability to record attendances and attach certificates electronically. It saves time and eliminates a series of manual tasks such as mailing, faxing, scanning and duplicated data entry.

In addition to licensing requirements the compliance system is being piloted with respect to water testing laboratories. The District currently receives test results on spreadsheets which are not the best format for searching and data analysis. A pilot project is currently being undertaken to allow laboratories to upload the test results to the Compliance system. This interacting path has created a win-win for both parties and allowed the District to enhance its water monitoring and reporting capability. As the ecosystem continues to expand and mature, partners from private and public sectors will benefit from major cost saving and operational efficiency gains.

BUSINESS ANALYTICS

The Compliance system provides business analytics which allows non-technical users to perform data mining and create high impact visual dashboards. The District can assemble data from various data sources and reveal insights. It helps the management to make quantifiable and informed decisions and drive continuous improvement of the water operations. The training dashboard provides the visualization of training expenditure and categorization. Management can use the filters on the right to mine the data. It provides historical information as well as trending of the training spending.
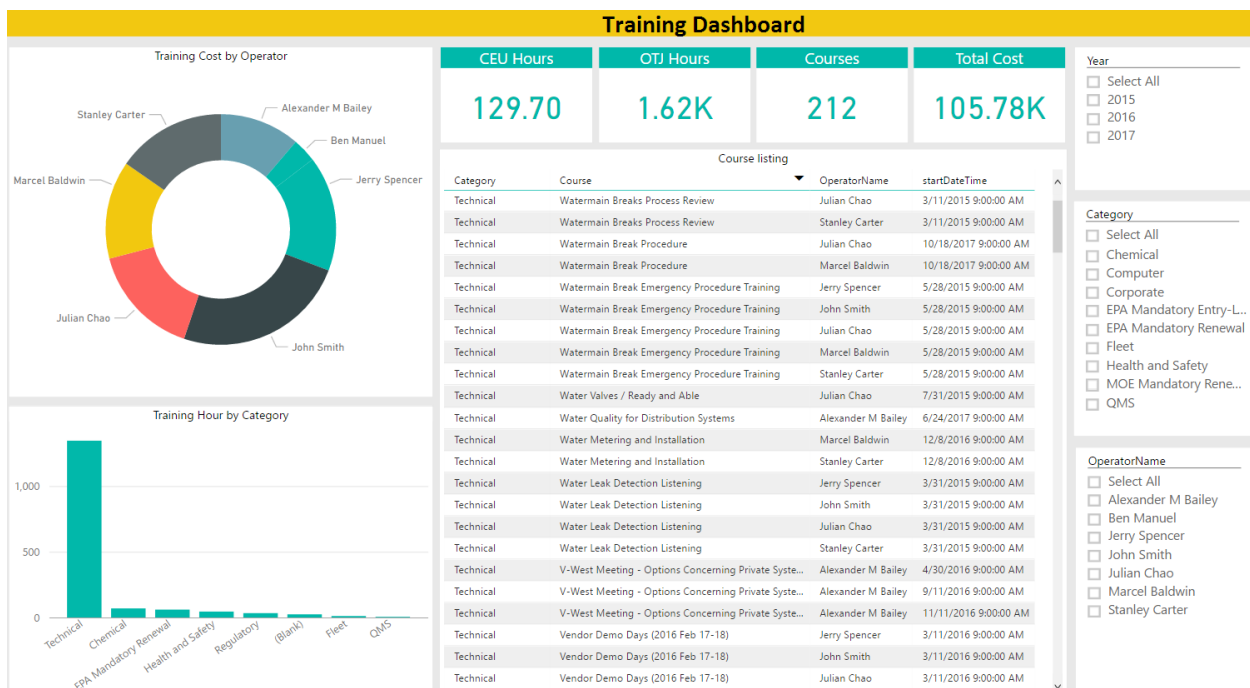

FIGURE 3. SCREENSHOT OF TRAINING DASHBOARD WITHIN THE COMPLIANCE SYSTEM

The heat map dashboard provides visualization of the exceedance events and location. The size of the circles is according to the number of exceedances. As illustrated by these examples, the business analytics and visualization are power tools for tracking and reporting on the key performance indicators (KPIs).
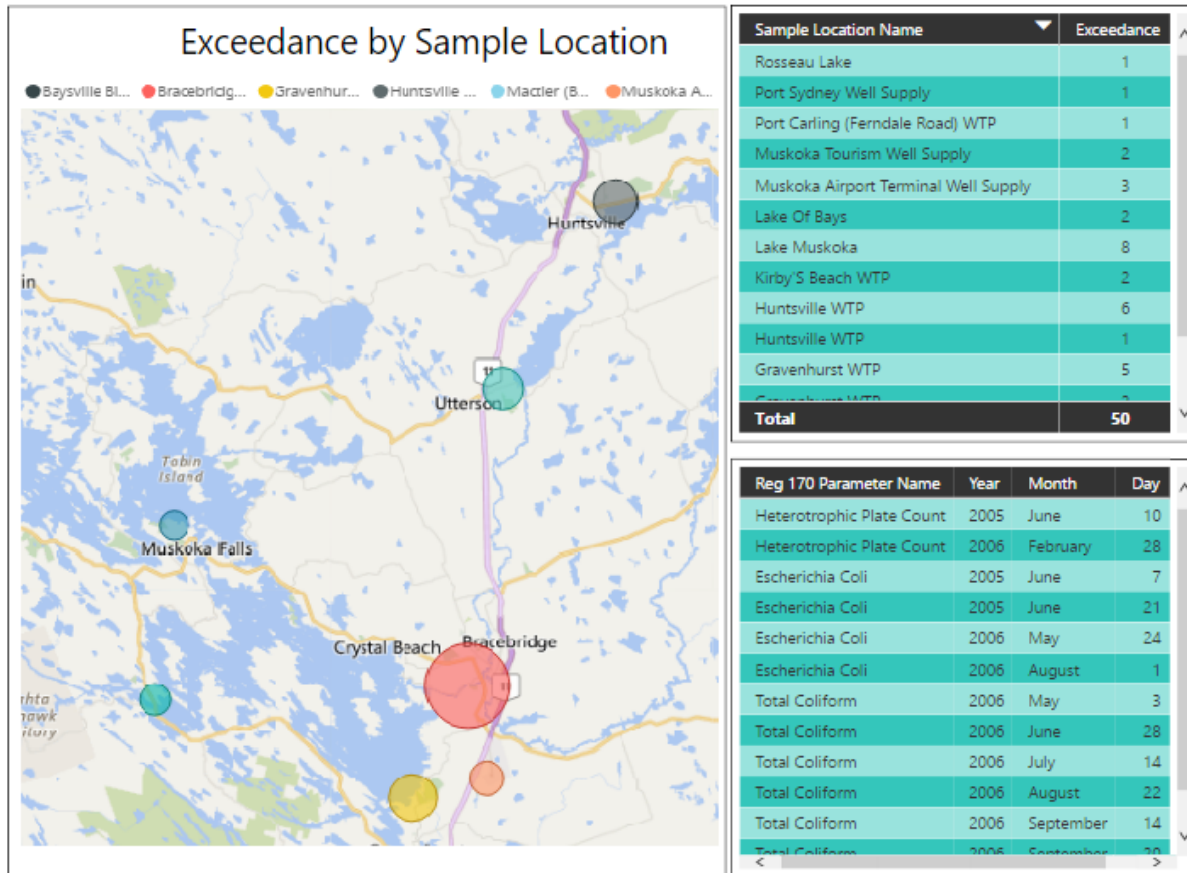
FIGURE 4. SCREENSHOT OF GEOLOCATION DASHBOARD WITHIN THE COMPLIANCE SYSTEM

CONCLUSION

The successful roll out of the Compliance system has received accolades from all stakeholders. It not only replaced the legacy system which was running on end-of-life technology, but also provides a solution platform that the District can grow and expand its operations. The industry trending cloud-base subscription model eliminates the need of upfront capital investment while offering flexibility and an affordable growth path. Its all-inclusive annual subscription fee enables fast adoption without having to internally manage the hardware, software and network procurement with associated setup time and costs. This model is best suited under tight budget constraint.

The Compliance system has completely transformed the former paper-based process into a fully automated and efficient digital operation. The District no longer fills out the paper renewal and upgrade application forms. The Compliance system generates the applications package and attaches the supporting documentation automatically. With the Compliance system, the District is ready for submitting renewal and upgrade application to MOECC electronically.

Moving forward, the rest of the water operations will be evaluated. The District has the need and desire to continue the modernization of its operations. The Compliance system is certainly a critical success element and has delivered many insights in guiding the continuous improvement journey within DWQMS.