WQX/ATTAINS APIs

Overview

The Clean Water Act requires states, territories and authorized tribes to monitor water pollution and report to the U.S. Environmental Protection Agency (EPA). EPA's Office of Water (OW) maintains the systems, APIs and Web Services that are used to submit and retrieve water monitoring data to/from EPA. Specifically, the Water Quality Portal, is the nation's largest source for water quality monitoring data. The Water Quality Portal (WQP) uses the Water Quality Exchange (WQX) data format to share over 340 million water quality data records data from 400 federal, state, tribal and other partners. The Assessment, Total Maximum Daily Load (TMDL) Tracking and Implementation System (ATTAINS) is an online system for accessing information about the conditions in the Nation's surface waters as reported by the states.

The Challenge

States, territories and authorized tribes that report water monitoring data to EPA have varying levels of resources and access to technical staff to support reporting requirements. WQX Web is designed to bridge the gap for smaller entities that do not have technical staff and cannot generate XML files to report data to EPA. Instead, these customers can take a spreadsheet or flat file, provide information to WQX Web about the file format and then use WQX Web to create the XML and submit it through the Exchange Network. EPA built a REST-based API on top of WQX Web, which opens capabilities to bigger entities that want to put the onus on EPA for creating the transmission file. Customers login with EPA-issued credentials to get an API key that is used for authentication.

Water monitoring data is also made available via the WQP and state water quality assessment conclusions are made available via ATTAINS for other systems to consume. Many of the APIs and Web Services are available to anyone and do not require special credentials to access them. This makes tracking use of the APIs and communicating with API users about changes to the APIs challenging. However, this has also broadened the usage of the APIs with many applications built on top of the WQP APIs and has allowed EPA to release How's My Waterway (https://mywaterway.epa.gov) which leverages these open APIs to communicate all these data to the public in a succinct way.

Implementation Approach

EPA's OW follows an Agile-development approach for WQX and ATTAINS. Each system has a team lead that is tightly engaged with the user community. OW has also established a "customer advocate" role on their development teams to represent the user community and their perspectives/needs. This role is critical to making sure their products reflect the user community's requirements.

The WQX and ATTAINS teams track, evaluate and prioritize the requests for enhancements and system changes. They have a group of states that they meet with monthly which provide feedback on system needs. Feedback can also come from other EPA offices that are trying to integrate with WQX/ATTAINS data or the user community. Input from the monthly call and other user feedback is also used to help prioritize enhancement requests and other updates.

Best Practices and Lessons Learned

In describing their API strategy and development approach, WQX/ATTAINS identified the following best practices:

- **Advocate for "API First"** – API Development Teams must be advocates for their services and communicate the benefits of an "API First" philosophy. It is important that systems use their own APIs and that system functionality is based on those APIs.
- **Demonstrate Business Value** – Customers have varying levels of understanding regarding the benefits and uses of APIs and Web Services. Development Teams need to be able to meet customers at their level of understanding and demonstrate value. For example, showing a customer how to take an Excel document and connect it to an API to get data at the touch of a button demonstrates the efficiencies of using APIs to access data.
- **Establish a Customer Advocacy Role** – Establishing a role on the development team for a customer advocate is critical. This individual must have a deep understanding of the customer's business needs and be able to communicate those needs to the development team. This helps to ensure that the system continues to meet the needs of the user community.

Contacts

For more information on WQX/ATTAINS' API strategy, please contact the following:

- **Chief, Water Data Integration Branch, U.S. EPA Office of Water:** Dwane Young
  Email: young.dwane@epa.gov