Capitol Systems Corporation
Case Study:

Arizona Department of Environmental Quality

The Arizona Department of Environmental Quality's (ADEQ) mission is to protect and enhance public health and the environment in Arizona. Established by the Arizona Legislature in 1986 in response to growing concerns about groundwater quality, ADEQ today administers a variety of programs to improve the health and welfare of Arizona's citizens and ensure the quality of Arizona's air, land and water resources meet healthful, regulatory standards.

THE CHALLENGE

ADEQ collects and manages a significant variety of compliance information to ensure organizations within Arizona meet state and federal guidelines for air, land and water use. Much of this information is reported to the Environmental Protection Agency (EPA) for federal monitoring and reporting.

ADEQ and the EPA depend on the flow of quality information for every aspect of their work. Yet, many of the current data systems and management approaches to information exchange are ineffective and burdensome. To improve the exchange of information, the EPA created the National Environmental Information Exchange Network (NEIEN) to provide an alternative to current approaches to exchanging data.

Using Internet technologies and standard formats based on XML, NEIEN will increase the efficiency of information management, improve the quality of environmental data, and provide ready access to this data by federal and State agencies, improving their ability to use this information to protect public health and the environment.

Water use and quality is especially important to an arid state such as Arizona. ADEQ's Water Quality Data Unit receives tracks and monitors reporting data associated with Safe Drinking Water and Water Quality Permits statewide. Using a federal grant provided by the EPA, ADEQ wanted to automate the submission and management of Discharge Monitoring Reports based on the EPA/NEIEN data exchange standards.

THE SOLUTION

After evaluating several potential solutions, ADEQ selected Capitol Systems to develop the **eDMR Pilot** system based on Capitol's *XGM Solutions Framework*.

ADEQ needed an efficient method to accept, validate, parse and integrate eDMR documents within their environment. Selection of the XGM Solutions Framework was based largely on ADEQ's desire to meet these needs, while also constructing the foundation for managing other EPA Network exchange formats and services.

Built on the strength of an enterprise management platform, the XGM Solutions Framework allows companies to deploy XML-based applications and services quickly, using the latest XML server techniques.

Capitol Systems consultants provided project management, design and development support, and delivered the project on budget and on time. Working closely with ADEQ, Capitol Systems consultants reviewed the business requirements and developed a technology approach leveraging the XML features of the XGM Solutions Framework to support the specifics of the eDMR Pilot.

Efficiently consuming and parsing XML is a key feature of the XGM Solutions Framework using a **single-scan** approach. As XML documents are received through either a standard protocol (HTTP/S, FTP or WebDAV) or via programmatic control (Java or .NET API), the document is scanned and validated once. Because the documents are stored in a parsed and indexed format, subsequent access to data elements is highly efficient and can take advantage of XML standards (XPath and XQuery) or Structured Query Language (SQL) manipulation.

The ability to expose underlying XML document elements through customized SQL *views* was extremely important to ADEQ. This approach greatly simplified the integration of eDMR data with the agency's enterprise reporting system (AZURITE) and leveraged the skills/training of current ADEQ staff. Without the need to re-parse XML or support intermediate (duplicated) tables, the XGM Solutions Framework ensures data accuracy, improves efficiency and provides a customized "relational" view of the incoming data.

THE RESULTS

While still in an integration phase awaiting full deployment, the eDMR Pilot system has demonstrated the capability of the XGM Solutions Framework to easily meet the EPA/NEIEN requirements for collecting compliance data through XML documents.

The new system will reduce the manual and duplicated effort of collecting, keying and validating Discharge Monitoring Reports. With the help of Capitol Systems and the XGM Solutions Framework, ADEQ implemented a solution that supports the collection and management of electronic DMR information, while establishing a standards based architecture for implementing other EPA data exchange formats and services.

THE TECHNOLOGY

•Oracle 9i Database
•Java (JSP and Struts)
•JBoss
•XML
•Open Source libraries and tools
•XMLSpy

ABOUT ADEQ

The Arizona Department of Environmental Quality is a state agency charged with the protection and enhancement of the environment and associated public health in Arizona. ADEQ administers a variety of programs to improve the health and welfare of Arizona's citizens and ensure the quality of Arizona's air, land and water resources meet healthful, regulatory standards.

ABOUT Capitol Systems Corporation

A leading information technology consulting firm, Capitol Systems provides business information services and solutions to public and private organizations. Established in 1995, Capitol Systems continues to assist organizations with information technology and has successfully implemented solutions with companies such as Motorola, Best Western International, McKesson Pharmaceutical Services and the State of Arizona.

Capitol Systems Corporation is headquartered in Phoenix, Arizona. For more information, contact us at 1-602-263-8182 or visit our web site at www.capitolsystems.com.