CapTech®

Agency Modernization with an Award-Winning Comprehensive Environmental Data System

SUMMARY

When the Virginia Department of Environmental Quality (DEQ) experienced operational lags due to an outdated core system, it engaged CapTech to collaborate with the agency to implement a system modernization. The project was completed within a tight timeframe, using a unique approach that reduced risk and costs. The modernized Virginia DEQ system received the Virginia Governor's Technology Award for Innovative Use of Big Data and Analytics.

CHALLENGE

The Virginia DEQ is committed to protecting the environment and promoting the health and well-being of Virginia's citizens. This requires maintaining and analyzing a vast amount of data, including records of permits, violations, community projects, and special studies, among others.

Prior to the modernization project, the DEQ was conducting its core operations on a legacy technology system that relied on out-of-date servers and unsupported software applications. Because of this, the potential for data exchange inside and outside the agency was limited, data quality was insufficient, security was a growing concern, and many processes were carried out manually. Scaling the system to meet growing demands was critical to improve efficiency, allow better use of data across its divisions and programs, and facilitate compliance of a variety of state and federal requirements.

Facing a tight deadline and recognizing the need to plan and establish efforts to support the large and complex system modernization, the agency engaged CapTech.

CLIENT

Virginia Department of Environmental Quality

INDUSTRY

Public Sector & Government

SERVICES

Program & Process Management

Services & APIs

Data Management & Governance

Data Visualization

Mobile & Devices

Large Program Management

THE APPROACH

The agency's technology infrastructure was unable to support the volume of changes and concurrent projects necessary to complete the modernization and meet desired target dates. Preparation for modernization included:
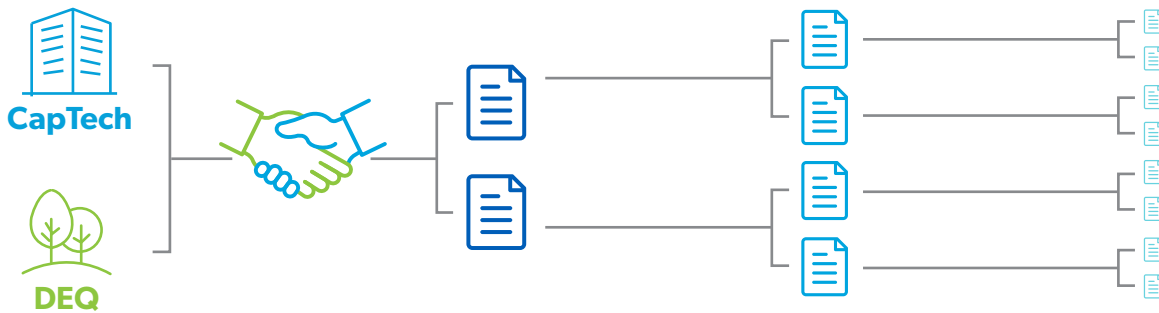
- Planning and implementing a strategy for enterprise system modernization

- Revamping many of the agency's operational and release management processes

- Incorporating updated development and project management methodologies

- Defining a framework and developing the new system to support future agency needs

- Helping technical staff adjust to newer technologies

The DEQ partnered with CapTech to assess the scope and define an approach that divided the project into manageable pieces to minimize risk, keep relevant business stakeholder groups small, and better support iterative development with multiple teams.

It consisted of four major steps and 20 smaller (4-6 month) overlapping development projects to rewrite the agency's system.

Once the delivery model was in place, CapTech built an API framework upon the agency's existing robust and stable underlying databases. CapTech also identified and built common, reusable User Interface components that were used as a foundation for the front-end work. A reporting infrastructure was also developed to support the analysis needs of each stakeholder group. This resulted in a consistent architecture utilizing current .NET technologies and web frameworks, including a personalized dashboard tailored to specific user functions.

Finally, the DEQ and CapTech tailored a development methodology using client-appropriate software development lifecycle, project management, and organizational change management techniques to help ensure the product was the best possible for the agency's user community and to help promote user acceptance and adoption.

STEP 1 STRATEGIC ASSESSMENT	STEP 2 FRAMEWORK DEFINITION	STEP 3 PORTFOLIO DEFINITION	STEP 4 PROJECT APPROACH
Define vision	Establish business technology leadership team	Assess business readiness	Agree on scope
Create roadmap	Develop technical architecture	Prioritize backlog of work	Execute projects
	Create PMO	Define project breakdown	

THE RESULTS

This innovative approach enabled the DEQ's modernization project to be completed on time and under budget, and the modernized system was awarded the Virginia's Governor's Technology Award for Innovative Use of Big Data and Analytics. The benefits of the modernization included:

- A revamped front-end system, including over 50 modules covering monitoring, permitting, compliance, and enforcement functions for Water, Air, Petroleum Tanks, and Solid Waste regulatory programs serving 700 users

- Decommissioned legacy servers, saving the agency both hosting and support costs

- A standard, modern, scalable, secure, and reliable agency-wide framework that met the DEQ's needs and supported its evolving business processes

- An improved end user experience with a clean design in a consistent and fully integrated application suite, tying together enterprise environmental data, GIS, document management, and financial systems

- Adoption of a PMO governance approach and continued use of the project execution model on all IT efforts across the agency

- Greater transparency, enabling improvements in tracking and process management across agency functions

- 100% user adoption

TOOLS

- .NET Web API with Entity Framework
- Open Source JavaScript and CSS libraries (Angular.js, Bootstrap, HTML5)
- ESRI GIS toolkit
- FileNet web services
- Logi Analytics / Logi Info & Ad Hoc reporting tools
- Oracle eBiz financial software
- Oracle 12c and SQLServer databases
- Tailored Agile/iterative development methodology
- Acuity
- AWS East
- Twilio

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