Modernizing Veterinary Applications: A Cost-Effective Query Builder Solution

ORGANIZATION

Our client is a leading agricultural organization dedicated to supporting livestock health, regulatory compliance, and industry innovation. A key part of its mission is to provide veterinarians and state officials with tools that streamline animal health documentation and compliance processes.

Our client's application serves as a critical resource for veterinary professionals, enabling them to:

- Issue electronic Certificates of Veterinary Inspection (CVI) for livestock transportation
- Manage veterinary state licenses and regulatory approvals
- Ensure compliance with interstate movement requirements
- Since CVIs are mandatory for commercial animal transportation, our client sought a modern, cost-effective solution to improve rule definition and validation processes within its system.

CHALLENGE

Our client needed a dynamic query builder UI to allow users to define and manage complex rules using AND/OR conditions. The ability to create custom rules efficiently was central to the application's core functionality. However, several key challenges had to be addressed:

Key Challenges:

- **Critical Application Dependency:** The application's primary function relied on an intuitive and powerful UI to define regulatory rules effectively.
- **Dynamic Subfiltering:** The system needed to dynamically populate subfilters based on selected conditions, ensuring real-time accuracy and adaptability.
- **Cost Constraints:** Our client required a budget-friendly solution, preferring to leverage an open-source plugin rather than developing a query builder from scratch.

A cost-effective, scalable, and user-friendly solution was needed to modernize the system while maintaining compliance, usability, and long-term maintainability.

TECHNICAL SOLUTION

XTIVIA conducted an in-depth evaluation of available solutions and identified jQuery QueryBuilder as the most suitable open-source plugin to meet our client's requirements. However, extensive customization and modernization were necessary to enhance functionality, ensure compatibility, and improve the user experience.

Customizing jQuery QueryBuilder for Advanced Functionality

- Conducted an in-depth analysis of the plugin's internal structure to extend core capabilities.
- Developed a custom subfiltering mechanism, dynamically updating available conditions based on user selections.
- Optimized the query-building workflow, allowing users to define complex logic efficiently.

Ensuring Compatibility with Modern Technologies

- The original plugin was built for Bootstrap 3.1, while our client's application required Bootstrap 4 compatibility. XTIVIA:
  - Upgraded the plugin's compatibility for seamless integration with Bootstrap 4.
  - Resolved UI inconsistencies by refining styles and improving CSS handling.

Frontend Modernization for an Enhanced User Experience

- Leveraged modern frontend frameworks, including AngularJS and React, to:
  - Improve interactivity and responsiveness.
  - Ensure seamless user navigation and efficient rule configuration.
- Developed custom UI components to streamline workflows and support future scalability.

Open-Source Optimization for Cost Savings

- Customized the open-source plugin to include advanced client-specific features, reducing development costswhile ensuring a tailored solution.
- Integrated the plugin seamlessly into our client's ecosystem, adhering to scalability and maintainability best practices.

XTIVIA's approach ensured the solution was fully aligned with regulatory needs, delivered cost savings, and improved operational efficiency for veterinarians and regulatory officials.

BUSINESS RESULT
XTIVIA successfully delivered a cost-effective, modernized query builder solution, improving efficiency, compliance, and usability while staying within budget constraints.

Key Outcomes:

Operational Efficiency Gains:
- Optimized the rule-building process, reducing the time needed to define and update complex regulatory conditions.
- Enabled dynamic subfiltering, allowing users to quickly refine rule parameters without manual intervention.

Cost Optimization:

- Avoided the high cost of developing a custom query builder by leveraging open-source technologies.
- Reduced long-term maintenance costs by building a scalable and adaptable solution.

User Experience and Productivity Enhancements:

- Delivered an intuitive, modern UI, enhancing usability for veterinarians and state officials.
- Enabled real-time, interactive query-building functionality, improving regulatory compliance workflows.

Future-Ready Architecture:

- Designed a scalable solution that can adapt to future regulatory changes and evolving business needs.
- Standardized frontend technologies, ensuring seamless system enhancements in the future.

By modernizing query-building capabilities, XTIVIA provided our client with a robust, cost-effective solution, empowering them with a high-performance application tailored to their regulatory and operational needs.

KEYWORDS

jQuery, Query Builder plugin, Unlocking the potential, Query Builder UI, Open-Source Plugin Customization, Advanced UI/UX Design, Bootstrap 4 Compatibility

SOFTWARE

jQuery, Bootstrap 4, CSS

ABOUT XTIVIA

At XTIVIA, we've been providing IT solutions and consulting services for over 30 years with a wide range of services, including technology assessments, IT service and asset management, software development, data analytics, cloud migration, DevSecOps, ERP, and enterprise content management. Dedicated to each discipline, ensuring that our clients receive the best possible service. Through strategic acquisitions, we've acquired talented people who are experts in their industries, passionate about what they do, and committed to providing exceptional service to our clients. Whether you need to improve your IT infrastructure or implement new software solutions, XTIVIA is here to help you achieve your business goals. XTIVIA has offices in Colorado, New York, New Jersey, Texas, Virginia, and India. www.xtivia.com