Resolute

From desktop to web app

Resolute Re-imagines complex, legacy healthcare application to provide flexible, intuitive access to critical patient data

Custom Component Dev | Web Development | Angular

TypeScript | Kendo UI Components

Company

A global manufacturer of healthcare diagnostics products

Customer since

2019

Goals

✓ Modernize a complex C++ desktop application using Angular and Kendo UI

✓ Enable web-based access to critical patient data from anywhere, via a browser-based, intuitive interface

✓ Provide a consistent user experience and workflows across all devices — desktop, laptop and mobile

background –

Adopting digital transformation becomes a must in healthcare

Medical professionals rely on **rapid access to patient and treatment information** to make life-saving decisions and deliver essential care. And in recent years, the trend toward digital transformation has been gaining traction in the Healthcare industry as a way to streamline workflows and lower costs - all with the ultimate goal of improving patient outcomes.

As the trend toward digital transformation accelerates in the industry, legacy systems must be modernized. Transforming desktop applications that store and manage patient information will be necessary to accommodate an increasingly mobile healthcare workforce and enable efficiencies and cost savings needed to reduce the cost of care.

Resolute modernized the client's legacy desktop application

Recently, Resolute Software helped a global manufacturer of diagnostic imaging and radiopharmaceutical products **modernize its legacy desktop application**, which is used by tens of thousands of medical professionals worldwide. With over 100 years of healthcare industry experience and around 50,000 employees globally, the company is in the business of digitizing healthcare, driving productivity and improving outcomes for patients, providers, health systems and researchers around the world.

Resolute provided essential expertise in Angular and Kendo UI development to deliver a rich, intuitive web-based application that met all of the client's requirements, while empowering users with flexible browser-based access to critical patient data.

User expectations for consistent UX created development challenges

The client's legacy desktop application had been in use for more than 15 years, providing access to a large-scale database of patient healthcare data, diagnostics, prescriptions, exam results and other critical information.

"The application was written in C++, and we were looking to modernize it by creating a set of web applications using Angular and Kendo UI."

— Veli Pehlivanov, Co-Founder & CTO at Resolute Software

The client's primary goal was to meet user expectations for a seamless experience that matched what they were accustomed to with the desktop application. As the web-based system would be a direct replacement of the legacy application, an identical user experience was essential. This experience had to be persistent across all devices — including desktop computers, laptops and tablets — to meet the diverse needs of its user base.

The client's internal developers had been struggling with ensuring some of the application's custom components would be functional in a web environment. Providing healthcare professionals with the essential functionality of the desktop system via the web was a challenge, as complex lookups and interactions are necessary to make connections between various data points pertaining to diagnostic test results, medical conditions and treatment methods.

Deep expertise in Angular and Kendo UI development, as well as **deep front-end knowledge about browser technology**, was essential to complete the project. The client consulted with some developers at Progress Software, who referred them to Resolute Software.

Pressing the boundaries of what's possible in web development

Translating the complex functionality of the desktop application to a web-based app posed numerous development challenges.

"Imagine a physician is entering a summary of a pregnant patient's third trimester check up, and ordering diagnostic results from a list of standard options. The physician may click on a box that opens a menu of additional options, and there's a specific workflow to how the summary is entered. The way those experiences operate must be completely tailored to the doctor's productivity while ensuring absolute accuracy."

— Veli Pehlivanov, Co-Founder & CTO at Resolute Software

Unfortunately, those custom workflows are difficult to duplicate in a web development environment.

Additional challenges involved implementing rules around how users are allowed to customize rich text elements. **"In a web browser, users typically have a lot of flexibility to create a rich text content, because the process involves editing a piece of HTML,"** Pehlivanov said.

"You can make it look like anything, and you have a lot of freedom. But the client wanted this freedom to be constrained in very specific ways, so that users were only able to make specific customizations."

— Veli Pehlivanov, Co-Founder & CTO at Resolute Software

For example, inserting text from a menu into the component would be completely governed by business rules, Pehlivanov added, **"The way custom styles would be applied in the rich text component needed to be very different from the native browser behavior. We needed to fully control and drastically customize the way HTML text is rendered,"** he said.

The new system under development was written in JavaScript, so in addition to Angular and Kendo UI expertise, significant knowledge of modern JavaScript APIs in the browser was needed in order to create a seamless experience that matched what users were accustomed to. The developers would be pressing the boundaries of what was possible. As such, Resolute assigned its most senior-level developers to the task.

A multi-phased engagement

Together with Resolute Software, our client embarked on a multi-phased project, delivered in three phases

→ **Discovery**

The Resolute team worked closely with the client to define the project requirements. They conducted numerous meetings to discuss the feasibility of implementing desired functions, features and components, and the implications of implementing those changes, both from a UX/UI and compliance perspective. They also identified technical prerequisites during this phase.

→ **Assessment**

This phase consisted of two parallel workstreams. The team performed a technology analysis of the client's Angular modern code base and identified any performance issues and bottlenecks and recommended best practices. At the same time, they conducted a UX/UI assessment, led by Resolute's senior UX designer. At the end of this phase, Resolute delivered a vision and prototype for a design that would preserve the critical UX/UI end-user requirements while achieving the functionality outlined in Phase 1.

→ **Development and testing**

During phase 3, the Resolute team set to work developing the predefined custom components. Feedback was provided on a weekly basis and incorporated via an agile, iterative development process.

Significant customization of the new components were necessary, so testing was an important part of the engagement. The Resolute team conducted rigorous functional tests, achieving over 80% coverage, to verify the usability of the new components and document them in a way that would simplify maintenance and enhancement.

"Working with Resolute has been a great experience. The team's technical knowledge and experience has been instrumental to our development effort. We look forward to continuing to work with Resolute to create key applications."

- Team Lead Software Development

Competitive advantage in 2020 and beyond

Resolute's team successfully tackled the technical challenges of modernizing the legacy desktop application, resulting in a new web application that is optimized to deliver a consistent and rich browser-based experience to users.

"The Resolute team brought extensive experience and knowledge in custom component development as well as Angular and Kendo UI, which was really instrumental for helping us achieve all our technical requirements.

Their expertise will help us implement custom visual components, as well, to provide an even richer, more intuitive UI for our users and provide them with rapid access to critical insights about patient data."

- the client said

The new web-based application will give users more flexibility to access patient information on a broader range of supported devices, enabling a greater degree of mobility as they tend to patients. This will be critical for supporting new care models such as in-home acute care, which is gaining traction in some geographies.

By modernizing its desktop application, the client has also gained competitive advantage, as the market has numerous options and solutions available to medical professionals in the region.

"Being able to offer web-based access to this critical application provides users maximum flexibility and empowers them to be productive wherever they are - at their desks, making their rounds or on the go - using devices with a variety of screen sizes and form factors.

As the web-based application provides a consistent user experience with the legacy desktop application, no training is needed to get up and running. Productivity improves immediately, reducing operational overhead while improving patient care and outcomes."

— the client said

Resolute

sales@resolutesoftware.com

Let's talk about your technology requirements.

Get in touch

USA

MA 01701, Framingham,
945 Concord St,

+1-617 386-9697

Deloitte. **Company to watch | Tech Fast 50**

BRONZE 2023 STEVIE WINNER **Business Professional Services**

Clutch ★★★★★

People First Company Award 2020 | 2021 | 2022 — by heartcount