

## Case Study

# Healthcare Enhancements Through Application Modernization

The client in this case study provides digital services that **support patient hospital access, and delivers information regarding hospital and healthcare resources, and patients in all care categories**. Its technology architecture was aging in an on-prem configuration that was not able to upgrade sufficiently to meet current and future service capabilities, and address the needs of the quickly evolving healthcare ecosystem in a timely manner.

To achieve necessary capabilities, and optimize patient and practitioner experience, the administration recognized the need to modernize their entire system. Doing so would enhance the organization's functionality while setting a foundation for its future growth, to be able to scale, and also launch new services within days, not months.

The client chose Datavail for its innovative technological capacities and decades long experience working in the digital healthcare domain. As a result, the client knew its strategic technology partner would understand its pain points, suggest appropriate and forward-thinking solutions, and execute a strategy with precision and accuracy to achieve its goals. Additionally, the client appreciated Datavail's extensive experience building healthcare solutions and related concerns for privacy and security regulations and industry best practices.

# Pain Points

The client articulated the primary goals they wanted to achieve through this technology modernization project:

## Enabling Future Expansion of System Capacities and Compliance

The client believed cloud computing offered better future opportunities for growth, productivity, scalability, agility, reliability, and expansion. The cloud's inherent capacities were unavailable in their on-prem system, and Datavail's services would be optimal for building and maintaining those future assets.

Compliance and security were also of great importance as the new computing opportunities opened real-time data and visibility, all of which required compliance with digital healthcare regulations.

### Provide access to real-time care data across a large hospital ecosystem

- The client wanted to prepare its system to have the capability to receive data in actual real time across a large hospital ecosystem. Their legacy system did not have the ability to collect data in real time, and only refreshed its data once a day. This concern was particularly difficult when the network was juggling resources such as bed availability to meet the needs of its large and diverse patient population.
- The client also wanted to modernize their application and migrate to the cloud to prepare for additional future capabilities such as having the ability to rapidly connect to potential new data sources when required; the legacy system before modernization did not have this ability.

## Optimize Business Values

Expanding future system capabilities required migrating the overall infrastructure from on-prem to AWS cloud. The C-Suite knew that the network's digital infrastructure would need significant agility to capture and respond to current and future healthcare demands, standards, as well as technological opportunities.

For example, system changes in the previous on-prem infrastructure environment could take weeks to complete, whereas operating in a serverless cloud environment saves time and resources, and allows the company to be more agile as far as being able to offer new services more quickly. The client also wanted to take advantage of capacities not available on-premises such as extensive automation for workflows and data automation.

### Minimize manual data entry by maximizing automation capabilities

- The client wanted to automate workflows throughout its system and network to improve productivity, and most importantly, enhance data consistency.
- Additionally the client wanted to reduce the workload for valuable hospital staff; the aging system required some manual data input regarding patient care and management, human resources and staffing details, inventories, etc.
- Automating many routine tasks would also free more clinical support staff time to increase patient care and other matters, including projects that would bring continued success to the healthcare ecosystem.

## Address Budget and Financial Concerns

**Lastly, the client saw opportunities for cost savings.**

- The agency was spending funds annually maintaining its aging infrastructure and wanted to reduce the high level of that technical debt. The savings would fund future innovations and cutting-edge health improvement services.
- Migrating from on-prem to the cloud would significantly free up their IT team's time from managing infrastructure to focusing on more strategic and higher value initiatives that will drive organizational success such as new capabilities, and system application enhancements.

## Solutions

The Datavail AppDev and DevOps teams viewed this project as a "monolith to microservices architecture" migration. They would migrate the existing services from a ".NET Framework to a .NET Core infrastructure to access modular configurations. Services and functions embedded within the original monolithic technology would be disassembled and reconfigured with the microservices capacities of cloud assets and features provided by the .NET Core programming.



Datavail's team also took advantage of its 16 separate AWS accounts to facilitate environments for developing specific applications and capabilities. These 16 accounts provided the infrastructure in which the team could design and develop the unique features that the new system would require. Because these accounts were interconnected, they could share resources across that network as those resources were needed. Also, the system accommodated app development in separate containers, each with its own security programming. Access to each container was limited to only those with authorization, maintaining security at the most fundamental level.

Microservices also facilitated the segregation of workflows, web services, and user interfaces by isolating each function into its own configuration and sharing microservices as needed to maximize the value of all.

While the design and development phases of the new configuration were intense and precise, so was the testing phase. The Datavail team is very detailed in quality assurance (QA) and testing methodology and processes, discipline, consistency, and rigor, to ensure that the application is released without material issues. In this case, Datavail's testing practices encompassed a series of test scenarios, including (but not limited to):

- 'Sanity/smoke' testing tests the sufficiency of the application design before assessing it for accuracy and appropriateness.
- 'Requirements validation' testing to ensure there were no gaps, omissions, or conflicts within app specifications.
- 'Automated functionality' testing, which encompasses a series of tests that track automation app performance across all its end user populations and components.

## Results

The new, cloud-based architecture will provide significant system improvements over the legacy on-prem monolith.

- Cloud-based automation will drive the capability to receive data in real-time, and the ability to turn on new services and bring in new data sources very quickly, at scale.
- Automation and microservice programming will reduce IT overhead while expanding its opportunities. Instead of spending their time and financial resources maintaining expensive legacy technology, the client's internal IT teams could focus on developing new services for improvements and growth.
- Security controls are more granular enabling enhanced precision. The system's modular design and microservice architecture will ensure that appropriate security walls and authorizations are in place to protect the client's sensitive personal data. The security features deliver compliance with healthcare regulatory obligations.

Looking forward, the client is enthused about the system's capacity for growth and innovation. The healthcare industry is exploding with new ideas and capabilities, all of which provide the organization with the opportunity to improve productivity and efficiency while most importantly improving care quality and satisfaction for both patients and providers.

For assistance regarding your .NET application modernization and cloud migration initiatives, contact the experts at [Datavail](#).



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11800 Ridge Pkwy., Suite 125,  
Broomfield, CO 80021



877.634.9222



info@datavail.com



www.datavail.com