



Northwell Health accelerates IT projects with a center for testing innovation

Deloitte Foundry Services

The Northwell Health journey

The journey begins

Northwell Health is the largest healthcare provider—and largest private employer—in the state of New York. The health system is home to several top academic medical research centers and many leading clinical programs. It is also the healthcare system that treated the highest number of COVID-19 cases in the United States. To date, across Northwell's network, the health system has treated 101,000 COVID-19 patients, including 16,000 who were hospitalized, more than any other hospital system in the country.

The IT environment at Northwell includes over 1,500 applications serving 23 hospitals, nearly 800 outpatient facilities, more than 75,000 employees, and a service area of nearly 11 million people.

The organization's testing innovation journey began in 2012 as it was preparing to comply with the latest update of ICD-10, the international classification system for diagnosis codes. Setting out to test IT systems for ICD-10 compliance, the organization soon found itself grappling with a range of challenges, including:

- Testing leading practices
- Centralized testing automation and test management tools
- Standardized testing templates
- Growing test cycle times and costs
- Fluctuating changes in testing demand

In 2012, Northwell engaged Deloitte to advise on a strategy for addressing these challenges, all with an emphasis

on improving testing speed, throughput, automation, and quality. A key underlying issue was that individual departments ran the testing programs, often without the resources to do so effectively or relying on external service providers. As a result, testing processes could be slow or delayed, expensive, and of inconsistent quality.

Northwell's office of the CIO and Deloitte worked together to devise an approach that could address the immediate needs of ICD-10 testing while also exploring a strategy for expanding the initiative once ICD-10 was implemented. The result: a plan for implementing a testing center of excellence (TCoE) that could streamline IT application and performance testing across Northwell's facilities.



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Improved operations while innovating and driving significant cost savings

In 2014 Northwell, in collaboration with Deloitte, approved and formally introduced the TCoE as a centralized testing office with these core objectives:

- **Reduce total testing efforts** by methodical end-to-end test management, traceability and test coverage, and involvement of subject matter specialists with test planning
- **Pare redundancy** via reusable test tools and templates along with well-defined criteria for entry, exit, and handoffs
- **Increase efficiency and repeatability** through use of automation for test data management, test script development, regression testing, performance testing, and more
- **Improve customer communications** with standardized ways to manage schedules, effort, and resources

The TCoE consisted of Northwell and Deloitte resources. Some of the Deloitte resources were located at Northwell while others were at remote locations to provide around-the-clock support. With this “foundry” model, Northwell could have Deloitte scale coverage up or down to accommodate demand—and shift from onsite to offshore service delivery with minimal impact on work in progress. During the COVID-19 pandemic, this model proved especially important for both Northwell and Deloitte because it enabled a quick transition from an onsite/offshore workforce to a completely virtual workforce while continuing to provide high-quality results.

Today, the TCoE serves as an *internal consultancy* to the hospital system. It introduces new efficiencies to testing operations and, at the same time, paves the way to ongoing innovation. The scope of the TCoE activities is broad, with more than 100 Northwell and Deloitte personnel delivering in the following areas:

Offering areas	Domains	Methodologies	Testing types
<ul style="list-style-type: none">• Managed testing services using Foundry model	<ul style="list-style-type: none">• Patient access• Charge capture	<ul style="list-style-type: none">• Waterfall• Agile	<ul style="list-style-type: none">• Functional• Systems integration
<ul style="list-style-type: none">• Intelligent Automation using robotics	<ul style="list-style-type: none">• Coding	<ul style="list-style-type: none">• Risk-based	<ul style="list-style-type: none">• End-to-end
<ul style="list-style-type: none">• Digital transformation leveraging AI, ML and cognitive solutions	<ul style="list-style-type: none">• Receivables management• Revenue integrity• Enterprise resource planning	<ul style="list-style-type: none">• Hybrid• Scaled Agile (SAFe™) - across US, India, and Mexico	<ul style="list-style-type: none">• Parallel• Regression• Automation• Performance

This approach emphasizes automation—think analytics, robotics, and cognitive technologies—to improve or replace manual processes and provide efficient and effective test cycles. Over 40 percent of all systems testing is now performed with automations, which have increased testing speed at a significantly reduced cost.

To date, the TCoE has completed more than 300 projects, recent examples including:

Crisis response

As the COVID-19 crisis peaked in New York, Northwell updated its electronic health record systems to manage an expected surge in patients at 23 affiliated hospitals. To verify the updates worked as intended, the TCoE simulated patient visits to each new nurse station and bed.

Impact: Reduced the time required to add new nursing stations and beds to the EHR system from one or more days to two hours.

Revenue integrity

The TCoE used software robots (bots) to confirm the prices of chargeable items were valid for all departments.

Impact:

- Tested over 7,000 charge description master (CDM) items in 12 weeks
- Improved testing velocity, which enabled 100 percent testing of all chargeable items



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Cloud migration

The TCoE ran regression tests to help migrate the on-premise enterprise resource planning system to the cloud.

Impact:

- Reduced testing efforts by about 1,500 hours and increased efficiency by 300 percent through automation of configuration deployment components
- Supported 100 percent pre-built release components and regression testing across two releases

Data governance

The TCoE significantly reduced Northwell's "inpatient discharged not final billed" amount by formalizing and automating the data governance process, thereby producing claims that were cleaner.

Impact:

- Identified more than 22,000 variances in CDM-related data, including years of legacy information, CPT code mismatches, and missing CDM codes
- Enabled *Shift Left* testing that helps reduce design defects and eases software debugging by promoting early defect identification and resolution

Results

Since the TCoE was established, its value delivered has been substantial. Specific accomplishments include:

- 30 to 50 percent cost savings from flexible labor and automation
- 75 percent reduction in execution effort across all testing cycles
- 40 percent of testing processes automated

A dedicated team that brings adaptability and speed to a bustling healthcare provider

At Northwell Health, an immediate need to run large-scale testing programs led to the establishment of a competency center within the CIO's office. The TCoE, a collaborative endeavor of Northwell and Deloitte, is a fully functioning organization that elevates testing to a discipline. Through its leadership, a multi-facility healthcare IT enterprise can react nimbly to key business needs while enabling cost reduction, high-quality testing, automation, and continuous improvement simultaneously.

Learn more about how Deloitte's quality engineering, automation, and Foundry Services capabilities can make a difference for your business.

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