Client story

NI: Modernizing apps with AI power

AI automation empowers product teams, improves code and accelerates transformation

Objectives:

- Modernize and migrate hundreds of applications and legacy technologies across the global enterprise
- Accomplish key initiatives at a record pace to achieve technical debt reduction by Q2 2025
- Employ emerging AI automation to empower product teams, improve code and documentation and facilitate further modernization

Solutions:

- Developed a generative AI-driven automation assistant framework to automate manual processes in the application modernization life cycle
  - Architected OpenAI's Assistant and GPT-4o models to automate routine tasks and trained the model using NI's existing application code repository
  - Packaged the framework as a developer-installable Eclipse-based plugin that enables self-service for NI development teams across the global enterprise
- Collaborated with NI to modernize and migrate within the required timeframe while adhering to NI's strict privacy and security protocols

Results and benefits:

- Improved modernization efficiency
- Positioned NI to meet technical debt reduction ambitions by Q2 2025
- Facilitated faster deployment and improved documentation with a microservices-based architecture
- Enabled NI product teams to autonomously manage ongoing modernization objectives
- Reduced human errors, improved code quality and established consistency with AI-enhanced automation
- Maintained business operations without interruption using an isolated modernization approach

Scaling cloud success with AI

NI, a leader in automated test and measurement systems within Emerson's Test & Measurement business group, applied its innovative approach to modernizing its internal IT architecture. In 2022, NI partnered with Unisys to modernize and migrate 90+ applications to the cloud in just 11 months, earning Unisys the "Partner of the Year" award for 2023.

"Our applications aren't legacy, but the technology and platform they ran on was," explains Tamas Mile, director of IT, NI. "We needed to move from an outdated on-premises solution to a more dynamic cloud-based environment that could scale with our needs."

Building on this success, NI embarked on a more ambitious project in early 2024. The company identified hundreds of applications across global product teams that required modernization, aiming to significantly reduce technical debt by Q2 2025 without operational disruption.

Recognizing that previous methods wouldn't meet this timeline, NI again partnered with Unisys to develop an AI-based assistant. This tool would accelerate modernization, enhance code quality, improve documentation and empower NI's product teams to manage the process autonomously.

"For our first phase, we didn't use any AI — it was completely outsourced to Unisys as a project. We handed over the repositories and the code to Unisys, and they came back with a working solution that we deployed," says Mile. "This time, a new collaboration will occur — among NI, Unisys and AI — and everyone will be highly involved."

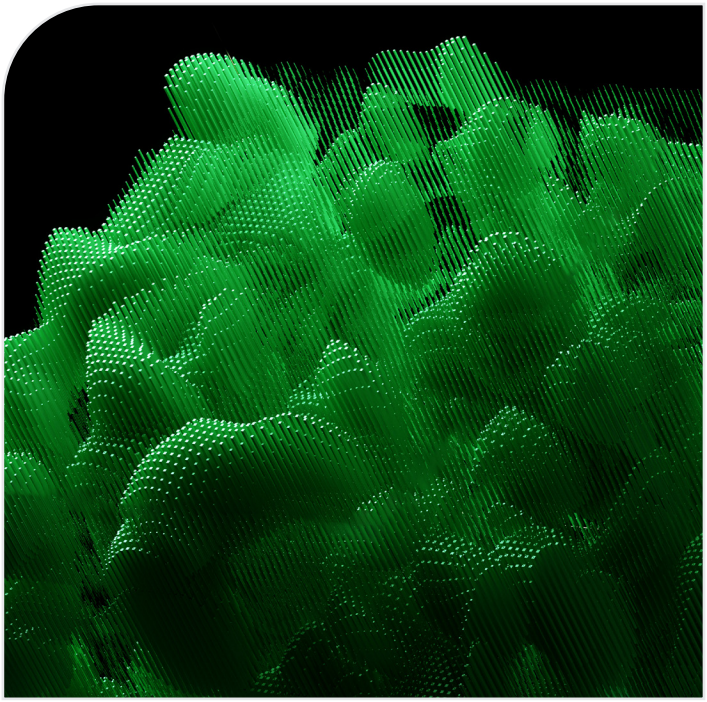
Building an intelligent code modernization engine

In just nine weeks, Unisys developed a generative AI-based automation assistant to streamline NI's application modernization process. This AI framework automates key steps across the modernization life cycle, from assessment to deployment and documentation.

Unisys designed the solution as an Eclipse-based plugin, allowing NI's developers to integrate it seamlessly into their existing workflows. This approach empowered NI's product teams while preserving their current architecture and enabling gradual enhancements.

The AI assistant automates numerous tasks, including:

- Generating application complexity assessment reports
- Converting legacy code to modern architectures (e.g., migrating to microservices, upgrading Java versions)
- Creating JUnit test cases and updating application logging frameworks



- Upgrading web services and addressing code issues
- Producing API and test documentation

Built on OpenAI's Assistant and GPT-4o models trained with NI's code repository, the framework delivers tailored, efficient results. It adheres to NI's AI and data privacy policies and follows established responsible AI guardrails, ensuring ethical and secure operation.

"We had successful pilots where the tool really shined. In one application, we managed to cover 90% of the code with this tool," Mile notes.

Automating code quality and control

The AI-based framework automates code import and conversion, removing dead code and fixing errors throughout the development process. It integrates seamlessly with NI's Continuous Integration and Continuous Delivery (CI/CD) pipelines, enabling end-to-end modernization from import to deployment.

Developers can compare original, converted and improved code in markup mode, with clear labels distinguishing AI-generated content from other automated processes. This transparency allows for better scrutiny and addresses potential AI hallucinations.

For complex scenarios like performance improvements and logic optimizations, expert oversight guides the process. Quality control measures include manual reviews, random sampling of auto-generated tests and Application Programming Interface (API) documentation checks.

The framework also enhances knowledge transfer by automatically generating comprehensive API documentation and test cases. This approach ensures modernized applications are well documented and testable from the start, facilitating easier maintenance and future updates.

Driving innovation through collaboration

After developing the framework, Unisys presented it to NI's architecture review board for approval and compliance checks. The teams adopted an Agile methodology, featuring weekly sprints, regular demonstrations and collaborative planning to ensure the solution aligned with NI's specific needs and existing architecture.

Unisys tailored the AI framework to accommodate project-specific differences, making it adaptable across various teams and objectives. This personalization allowed the solution to meet rigorous standards while serving NI's operational needs beyond a single project.

"What I really appreciate is the flexibility of the Unisys team," Mile emphasizes. "We changed our needs often and sometimes provided information that required rework. Unisys was always very supportive and dealt with these challenges professionally."

A new future for NI with AI

While exact measurements are still being gathered, the AI assistant has noticeably accelerated NI's modernization efforts, enabling the migration of hundreds of applications worldwide. By automating manual processes, the framework has reduced errors and improved consistency across the global enterprise.

A key achievement is developer autonomy. NI's product teams now access self-service modernization tools, enhancing productivity and allowing code updates aligned with business goals. This positions NI to meet its modernization targets on schedule, with improved code quality and documentation.

Unisys continues to provide ongoing support, developing additional plugins for a limited set of use cases and helping teams optimize the framework. The project is set to be completed in Q2 2025.

This partnership balances NI's growing autonomy with Unisys's expertise. NI now wields powerful modernization tools, while Unisys and NI experts collaborate to refine the AI framework and shape the enterprise's future.

Mile reflects on the ongoing collaboration: "We've integrated the Unisys folks into our teams, and they work as team members. This augmented approach works much better for us because we can address uncertainties and fill gaps together on demand."

As NI continues to work toward its goal of significant technical debt reduction by Q2 2025, the partnership with Unisys and the AI-driven framework stands as a testament to the power of collaborative innovation in tackling complex modernization challenges.

To explore how Unisys can transform operations and business outcomes with generative AI, visit us online or contact us today.

unisys.com

02/25 4026-8504