New York City Transit Improves Service and Safety with CIMPLICITY Enterprise SCADA

New York City Transit (NYCT) operates the largest and busiest subway system in North America and seventh busiest in the world.

Providing service to about 2.4 million riders every day, NYCT operates:

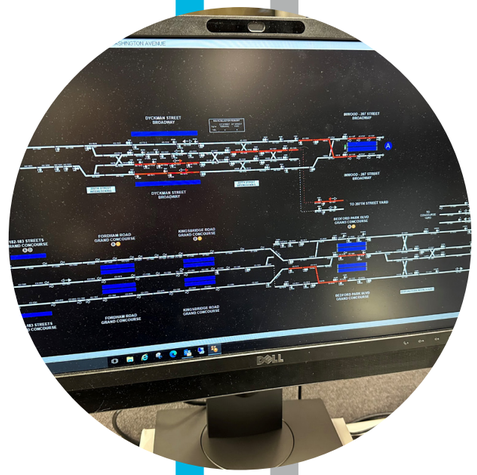
- 493 stations – more than any other subway system worldwide
- 25 routes
- 693 miles of track
- 24 hours a day, 7 days a week, 365 days a year

As the heart of public transportation in the Big Apple, NYCT also has impressive numbers for its CIMPLICITY enterprise-wide SCADA from GE Digital: more than 1,500,000 tags, making it one of the largest SCADA implementations in the world.

Super-Size SCADA

According to Calvin Forde, general superintendent of signals for NYCT, the automation software system from GE monitors nearly every electronic device related to the business of moving trains. The system manages millions of real-time indications coming in from the field – including field signals, power indications, hazards, network switch diagnostics, and PLC / controller diagnostics. All these indications are saved in a historical database by time and date for future examination when required to resolve an issue or to improve operations of the system.

INITECH INDUSTRIAL LLC



To help meet safety and on-time service goals through automation, Forde and the team at NYCT work with iniTECH Industrial, a GE Digital solution provider and transit system integration expert, as well as AutomaTech, a GE Digital representative.

This partnership of co-innovation began 15+ years ago, and the software solution has provided significant results.

- Improved safety – decreased exposure to danger by about 98% with centralized operations, diagnostics, and zero unnecessary field investigations
- At least 80% faster detection of anomalies through diagnostics
- Faster operator response and resolution of equipment failures and malfunctions
- Increased efficiency – with diagnostics, technicians know what parts or materials they will need in the field to resolve an issue
- Higher quality of service for riders
- 24/7 system availability and reliability
- Digitized playback for analysis, optimization, and historical records
- Improved upper management visibility into operations

"As a result, we provide the highest level of on-time service possible," Forde noted. "People expect the train to arrive at a certain time, and we'll be there because we can mitigate issues faster and without unnecessary delays."

Industry-Leading Transit Automation

Automation at this scale evolves in stages. NYCT started using CIMPLICITY at a machine level as a localized point solution. Diagnostic PCs monitored devices locally, and technicians had to do field visits to each location for status updates.

Forde had a vision of a SCADA-based Central Monitoring System (CMS) that provided supervisory monitoring of an entire integrated subway system, aggregating field equipment data. Technicians would spend less time detecting an issue with the field equipment there by providing a more straightforward and efficient way to keep eyes on the critical operations of the subway in real time.

The CMS – based on CIMPLICITY for the SCADA, Proficy Webspace for web-based access, and Proficy Historian for industrial data management – grew in phases with various sections coming on board. NYCT was able to take advantage of CIMPLICITY's powerful enterprise SCADA capabilities including support for multiple projects. The team has enhanced the system beyond supervisory visualization, monitoring and control to analyzing problems and starting to drive predictive maintenance.

Faster Response & Improved Life Safety with Playback

One of Forde's favorite capabilities is CIMPLICITY's Digital Graphical Recorder (DGR). DGR delivers important incident playback with storage in Proficy Historian for long-term usage and easy accessibility over the web-based log-in system.

With DGR, central monitoring and remote users can review incident details, magnify and shift screens, and analyze what transpired to make determinations. Remote playback capabilities help to prevent technicians from going in the field unnecessarily for investigations. Additionally, the stored playback assists with identifying operator errors and training needs as well as providing operations records for legal purposes.

"Playback is the 100% bonus. Event diagnostic and response time decreased significantly," Forde explained. "Every day, technicians are doing playback diagnostics that would have taken a whole day or days of troubleshooting. Also, we're minimizing our exposure to danger by more than 98%. After playback, technicians only go on the track when needed. For us, that's a better life-safety situation."

NYCT achieves flexible access for 125+ users through Webspace. Senior technicians can even check into the system from home to investigate, make changes, and even assist an on-site technician as needed, which speeds the right response.

Nigel Browne, computer specialist with NYCT, noted, "With the playback, we really assist the users with the information that they need and easy access through Webspace. The system is simple to use after training, and we can see everything displayed."

Train Positioning Monitoring System (TPMS)

From the diagnostic system that started with CMS for maintainers, NYCT then worked with iniTECH to develop a TPMS with CIMPLICITY to provide Rail Control Center (RCC) operators with the ability to monitor train locations in real time.

Now, not only are the trains able to run more reliably because technicians repair field failures faster, but route setters can get a bigger picture of how the train headways and service patterns impact train arrivals. With this visual now displayed to all route setters, NYCT achieves better handling of train traffic congestion.

Axle Counters and Communications-Based Train Control (CBTC)

Additionally, iniTECH is integrating Frauscher axle counters into the CIMPLICITY CMS. As a safety improvement, the axle counters give metros the ability to implement advanced CBTC and still accommodate non-CBTC equipped trains.

Through the connectivity developed by iniTECH, CIMPLICITY can capture key data published by the axle counters as well as overall health status of each module and field sensor.

Next Steps

While NYCT has a better understanding of the subway system and seen industry-leading results, this team is continuously making improvements and has plans for next steps such as:

- Additional simplification of operations through CIMPLICITY – such as automatically monitoring and controlling switches exposed to outside freezing temperatures to prevent failures rather than time-based switching on the hour to prevent freezing
- Exploring unified authentication – when operators forget their password, they can self-serve to fix the issue without drawing on administration resources for assistance
- Hardware changes to improve load bearing

After 15+ years working together, Forde knows that NYCT can achieve their goals with GE, iniTECH and AutomaTech's help.

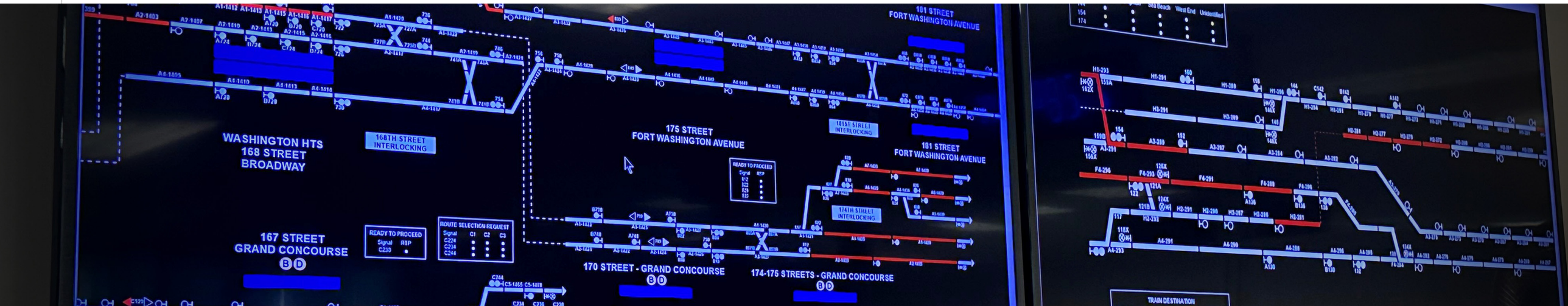
"I go to GE for what I need, and it happens," Forde concluded. "Also, iniTECH will turn every stone to see how to address an issue. They will step out of their lane to get things done quickly."

About iniTECH Industrial

At iniTECH, we help customers meet their goals by developing, implementing, and supporting custom process automation and information integration solutions. iniTECH has been serving a variety of industries through more than 150 combined years of experience. We have a unique combination of engineers, consultants, and programmers with the in-depth knowledge required for successful completion of automation challenges. iniTECH is a certified Women's Business Enterprise (WBE) in 16 States and proud member of AREMA, the American Railway Engineering & Maintenance-of-way Association.

About AutomaTech

AutomaTech is a leading provider of industrial technology solutions focused on improving your operational performance. By harnessing the power of data, we enable significant gains, visibility across your entire organization, and increased profits for a competitive edge. Our product offering includes a flexible and scalable mix of hardware and software solutions to solve your toughest challenges while providing a roadmap for future improvements and growth.



About GE

GE (NYSE: GE) is the world's Digital Industrial Company, transforming industry with software-defined machines and solutions that are connected, responsive and predictive. GE is organized around a global exchange of knowledge, the "GE Store," through which each business shares and accesses the same technology, markets, structure and intellect. Each invention further fuels innovation and application across our industrial sectors. With people, services, technology and scale, GE delivers better outcomes for customers by speaking the language of industry.

Contact Information

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