



An Aerial View of the University of Virginia Campus



Customer Success Story

University of Virginia Charlottesville, VA



The University of Virginia's Lighthouse System,
Built via ICONICS GENESIS64

About University of Virginia

Founded in 1819 by Thomas Jefferson, the University of Virginia is made up of 11 schools in Charlottesville, VA, plus the College at Wise, spread out in over 500 buildings or facilities within 1,606 acres. The University offers bachelor's, master's, educational specialist, first-professional degrees (law and medicine), and doctoral degrees in a growing variety of fields. The University of Virginia was named as the No. 2 best public university in the 2015 edition of the U.S. News and World Report rankings. In the 14 years since U.S. News began ranking public universities as a separate category, the University of Virginia has ranked either No. 1 or No. 2 and it continues to rank in the Top 25 among the best of all national universities, public and private.

ICONICS Software Deployed

As part of a competitive RFP process, the University

of Virginia selected ICONICS GENESIS64™ Building Automation suite, Hyper Historian™ high-speed, robust data historian; MobileHMI™ mobile enterprise application; AnalytiX® suite of analytical tools (including Facility AnalytiX predictive software for facilities management); WebHMI™ Web-based, real-time automation software; AlarmWorX64™ Multimedia for multimedia OPC alarm management; Alarm Analytics alarm management, reporting and analysis software; and BridgeWorX™ real-time workflow for data bridging.

Project Summary

The school required a campus-wide visualization and monitoring platform and wished to implement the project themselves, integrating any newly acquired software with their own “home-grown” systems. The new system, named “Lighthouse”, would need to tie into their own generated Big Data; a wide array of locations and equipment, including a main heating plant and two satellite plants, seven chilled water loops (in 13 plants), three primary electric substations, and over 2,800 meters (internal, external and virtual).

The University had several requirements for its new control system. It needed to support trending, reporting and billing functions. It needed to be modern and provide engaging, rich visualization. It needed to provide central alarm management and process scheduling, as well as provide a common interface for building automation system (BAS) integration for utility/facility operators, faculty and staff.

It was important to the University of Virginia that their selected solution be able to connect to a wide variety of data sources, including BACnet, Modbus, OPC, Web Services, SNMP and various other databases. Equally

important was the ability to work with Microsoft's platform, including integration with Windows Server, Internet Information Services (IIS), SQL Server and Active Directory. Other considerations were if the solution could utilize cloud-based servers in addition to those on premises and what are the redundancy options.

Benefits of the System

The University appreciated the ICONICS platform's asset-based navigation in dealing with energy-related equipment and meters and their existing BACnet architecture. ICONICS Hyper Historian trends over 40,000 of the University's BAS/SCADA/asset point definitions. Each of these points contain dozens of available properties,

trends of utilities/energy use for timespans from an hour to a year. They can also see instantaneous demand (usage) for all trended utilities for a building along with a comparison with data from other similar buildings along with an average among comparable buildings. Users can choose their own buildings for comparison or use defaults, as well as see average, maximum or total data (either raw or normalized) by gross square footage, to use one example.

After installation, the University of Virginia was able to correct billing errors related to a variety of meter and building automation system issues, using ICONICS Hyper Historian data and visualizations to help highlight anomalies. The ICONICS system revealed symptomatic energy use patterns,



A District Energy Summary in University of Virginia's Lighthouse System



Substation Real-time Reconciliation Screen

in addition to alarms, totalizations, averages and other functions. There are over 100,000 different trend views available in the system, comprised of almost six billion data samples per year (based on default sample rate). Hourly summary data exists for multiple plants, buildings and meters, adding up to additional tens of millions of records per year.

The innovative asset-based approach now allows project engineers to easily test their own planned asset structure and definitions. University staff initially focused on setting meter definitions to eventually include in their planned building/plant energy dashboards. The iterative, collaborative process allowed the staff to quickly try multiple "looks" before deciding upon a final visualization theme. Utilizing ICONICS solutions, users are able to see graphic

which can now be targeted and corrected. With the information provided through the University's new building energy monitoring and control system, the school reconciled into the hundreds of thousands of dollars of energy spending.

Conclusion

Now that the University of Virginia has been able to justify its return on investment in ICONICS software, it plans to expand the system. Future plans include central alarm announcements and alerts for "critical" points, forecasting, and customized pages for specific research or clinical interests. The University of Virginia's Lighthouse project, with ICONICS building automation and energy management software, has become a beacon for future building operations and energy use.