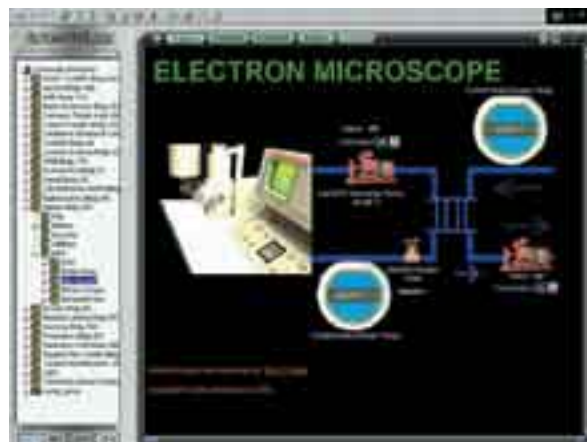# University of Arizona
WebCTRL® and BACnet®

The University of Arizona manages over 435 buildings spread over the entire state. Within those buildings are fire systems, security systems, utility systems, and energy management systems made by over 35 different vendors. When they decided to integrate these disparate pieces into a unified system, it was obvious they needed a flexible communications protocol and a powerful building automation system. That's why they chose BACnet® and WebCTRL®.

"We chose BACnet because it was the most readily adaptable protocol for integrating existing equipment and for adding new equipment" said Joe Branaum, manager of the Integrated Systems Group at the University. "The fact that it is an open protocol was very important to us."

Once a standard protocol was selected, they evaluated several vendors' BACnet systems, comparing the features and capabilities against their needs. They performed hands-on testing of the most promising candidates, and settled on Automated Logic's WebCTRL system. WebCTRL's power and flexibility were exactly what they needed, and its web-based design gave them virtually unlimited access to their system.

WebCTRL allowed them to access the system from laptops, desktop computers, and cell phones. It also allowed them to easily create custom web pages which served as the system graphics, a capability that's especially important if your system includes equipment like a scanning electron microscope not found in most HVAC systems.

"I'm very impressed with WebCTRL" says Branaum. "It outperformed every other system we looked at."

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Of course, picking a protocol and a front end was just the first step. The next step was the actual programming to bring data into the system and tie it all together. Since they were primarily tying into existing non-BACnet controls, this involved a lot of point mapping in gateway (translator) modules, integrating data from multiple proprietary protocols into the BACnet system. To date, they have brought approximately 38,000 points into the system.
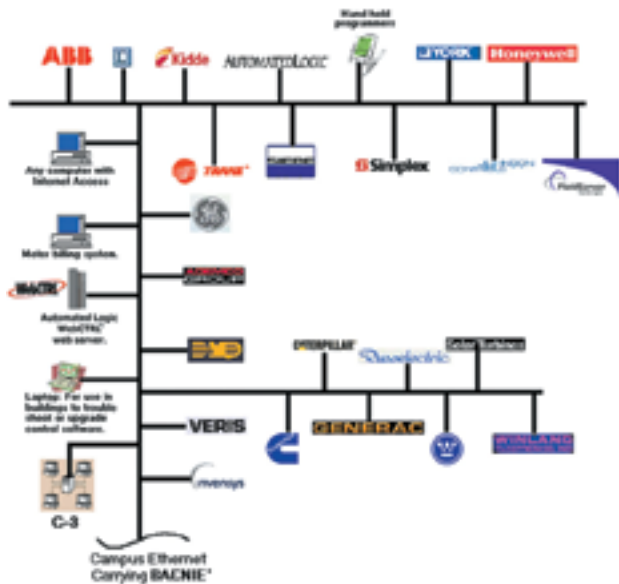
The flexibility and openness of BACnet allowed them to write custom programs for their SCADA (Supervisory Control and Data Acquisition) computers to gather data over the BACnet system and analyze system performance. The extensive trending and analysis performed through their BACnet integration also allows them to run their campus utilities more efficiently. By correlating energy consumption, weather, building usage, and other factors, they can now forecast energy demand 12 hours in advance, allowing them to make optimum use of their cogeneration plant.

Has all this work been worth it? Definitely! Funding has come from a variety of sources, including Energy Service Company (ESCO) projects that require careful documentation of the performance and payback. The University was practicing energy conservation before the new system went in, but even so the payback period for integrating an existing building into the BACnet system was under five years. They also found they could throttle back their fans and pumps when a building was not at peak load, extending the equipment life as well as saving energy.

The web-based nature of the University of Arizona system also provides additional benefits. Engineering, maintenance, and other facilities staff can access the system from any computer on the University network, greatly improving accessibility. Technicians can carry a laptop computer with them and plug into any available Ethernet port to adjust or troubleshoot the system. Key personnel are provided with web enabled cell phones, which can also be used to access the system. Thus a technician can receive an alarm on his/her cell phone and then use the same phone as a web browser to troubleshoot the system. If the technician needs more information he can plug a laptop computer into the phone, use the phone as an Internet connection, and get the full capabilities of an operator workstation. This enhanced access even allowed the University to cancel plans for a 24-hr. alarm center, because they could handle everything remotely. Total control: anywhere, any time.

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