

Case study

Ave Maria University

Ave Maria, Florida



Industry best practice places new university among world's most technologically advanced

Ave Maria University, located in southwest Florida, opened its doors to students on August 27, 2007. Ave Maria is the first new Catholic university built in the United States in more than 40 years and among the world's most technologically advanced, thanks to the steadfast vision of its founder and design team. By employing the industry best practice of technology contracting and Johnson Controls, Ave Maria successfully converged 23 systems from information technology (IT) to facility operations, on a single Internet protocol (IP) network.

The university is the product of, founder and chancellor, Thomas S. Monaghan's dream to build an institution of higher education that would be faithful to the teachings of the Catholic Church. After more than five years of planning and construction, and four years of operating from a temporary campus in Naples, the university made its permanent home on a 908-acre campus in a new town named just for it - Ave Maria, Florida. The campus has 500,000 square feet of facilities, serving nearly 500 students and 200 faculty and staff, and plenty of room to grow.



All of the 23 facility and IT systems on campus are managed from the network operations center.

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BRYAN MEHAFFEY
VICE PRESIDENT OF TECHNOLOGY
AND SYSTEMS ENGINEERING
AVE MARIA UNIVERSITY



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Once ground broke for the new university, the clock began ticking on a 20-month construction period required for classes to begin on time. The tight timeline was not the only challenge for the design and construction team. Bryan MehaFFEY, vice president of technology and systems engineering, had a unique vision for Ave Maria's technology division. He sought to incorporate IT operations and facility operations into one group, and to combine the university's IT infrastructure, fire, security, HVAC and building control systems on a common platform.

To MehaFFEY, converging these technologies made sense from both a construction and ongoing operations standpoint. "We learned quickly though that this was an approach most architects and engineers were not accustomed to," says MehaFFEY. "With that in mind, we developed our specification and looked for a partner who could handle the required amount of technology. After reviewing proposals from Honeywell and Siemens, we chose Johnson Controls as our technology partner because it was very obvious they understood our vision and knew exactly what we wanted to do."

Technology contracting solution enables vision

Unlike traditional contracting with multiple subcontractors installing separate proprietary systems, technology contracting involves appointing responsibility for planning, designing, installing, integrating, commissioning and servicing technology systems throughout an enterprise to a single, qualified party. The responsibility extends to all low-voltage systems such as fire, security, HVAC and building automation, lighting, communication and specialty systems.

As Ave Maria's technology contractor, Johnson Controls oversaw the design and installation of an IP backbone, as well as all the technology that resides on the network. LonMark, an open data protocol, allowed equipment from various vendors to be installed and integrated on the same infrastructure. As a result, unnecessary networks and cabling were avoided. And, since any vendor or contractor can introduce new equipment and functionality to the infrastructure, Ave Maria's campus is future ready. "My idea of an intelligent building is one that not only meets your immediate expectations but can embrace future technologies as they are developed. And that's what Johnson Controls approach has helped us create," says MehaFFEY.

Systems installed include Johnson Controls Metasys® building management system and P2000 security management system, Cisco data equipment, Notifier fire panels, GE lighting, IClass smart cards, HID proximity readers, HVAC components, a Maximo maintenance management system, an AVI audio/visual distribution system, and servers among other equipment and applications.

Approach brings construction and operational efficiencies

For chief financial officer, Paul Roney, completing construction on time and on budget were primary concerns. "I was told by the construction manager that the required technology exists, but this approach had not been done before and there was concern about added costs and slowing down the process," says Roney. "Considering we started out with a tomato field, I think the construction process went well. We finished on time and under budget, which is amazing."

Ave Maria saved approximately \$1.5 million by avoiding unnecessary and redundant cabling included in the original campus design. "Picking one contractor to do this project saved an enormous amount of not only money, but something more costly, being time. That's because we were able to reach out to one partner, consolidate all of the project management, mobilization and overhead costs into one platform," states Mehaffey.

Compared to traditional designs, the university projects savings of \$350,000 annually in staffing costs and another \$600,000 annually from reduced utility costs. "We manage the entire campus operations – facility systems and IT systems – with just seven full-time employees, which is pretty lean when you consider the alternative of as many as 24 people to manage those same entities," says Mehaffey. "The fact that we are operating more efficiently means that we are able to apply more resources to educating students, which is really what we are all about as a university," adds Roney.

All of the systems on campus are managed from the network operations center. Operators use the Metasys system to monitor, control and largely automate the campus's chiller plant, heating and cooling, indoor air quality, laboratory air flow, lighting and lavatories. The system is also responsible for power management and asset tracking. Other systems monitored from the center include Internet, email, fire panels, digital video monitoring, and security and access control via the Johnson Controls P2000 system. And, because all the systems are Web enabled, operators can monitor and control them from their smart phones.

A technologically advanced, secure academic environment

The benefits of Ave Maria's green field construction are obvious. Students, faculty and staff enjoy brand new academic and residential facilities, a campus designed for convenience from the ground up, and state-of-the-art teaching and learning equipment including campus-wide wireless Internet access.

"The level of technology on this campus is important to Ave Maria's reputation and our ability to deliver a high quality, safe academic environment to our students," says John Sites, vice president for academic affairs. "But it's also something students and faculty don't think about and that's a good thing because it means they are focused on teaching and learning, instead of their comfort or safety."

The integration and interfacing of systems at Ave Maria make it exceptionally comfortable and safe. The Metasys system allows operators to react to temperature fluctuations and make HVAC equipment adjustments with a click of a mouse. Integrated occupancy sensors activate lighting in rooms and lecture halls and airflow adjustments as needed. Integration benefits fire and life safety as well. If the fire alarm system detects a fire, Metasys signals the HVAC system to stop delivering fresh air to the area and pressurizes the path of egress, clearing it of smoke. The access control system will unlock doors along the route, and train surveillance cameras on the fire to give responders a live feed.



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CHIEF FINANCIAL OFFICER
AVE MARIA UNIVERSITY



Surveillance cameras are trained on the Code Blue emergency stations scattered throughout campus.



The One Card provides individualized facility access and serves as a library and debit card.

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The One Card also provides 24-hour access to library facilities and is used to check out materials.

Additional security features include biometric readers for an additional layer of identity verification at data centers. Code Blue stations are scattered throughout campus and surveillance cameras are trained on them whenever they are used.

"Because of the integration and interfacing we've done, we were also able to implement a One Card system in less than three weeks time. And it's been our biggest hit with the students," says Mehaffey. The One Card gives students, faculty and staff individually tailored access to dormitories and academic buildings, including laboratories and computer rooms. It also acts as a library card and debit card for the cafeteria, bookstore, copying and printing.

Partners in an advanced future

"We're looking to build enrollment to 5,500 students in the next 20 years with an average SAT score of 1400. Sort of a Catholic ivy league university," says Monaghan. "Technology will help by giving us a competitive edge. While we're proud of the beauty of our campus and have additional plans for it, if things like the air conditioning aren't working properly or doors don't lock, students will forget about the beauty pretty quickly."

"I feel the university is as future-ready as it could possibly be because of what we've accomplished with Johnson Controls help," says Mehaffey. "When people ask me what kind of partner they could use for a project of this magnitude, some are surprised when

I say Johnson Controls because they know them for building automation. But Johnson Controls is much more than that. They have the technology and the people and were able to pull in resources from all over the world to make this project successful."



Brand new academic facilities are built in the Frank Lloyd Wright style.



Thomas Monaghan's vision for the 104-foot tall campus Oratory is taken from a chapel designed by E. Fay Jones, an accomplished apprentice of Frank Lloyd Wright.