*“The test of a first-rate intelligence is the ability to hold two opposed ideas in mind at the same time and still retain the ability to function.”*

F. Scott Fitzgerald made a good point about intelligence when he wrote those words around the turn of the 20th century. The great American author probably came up with the thought-provoking statement in the safety of his own home, underneath the glow of a lantern, while a light breeze rolled in through an open window. Yep, life was a little simpler back then.

Today, members of corporate America complete their personal masterpieces – mostly PowerPoint presentations and lengthy internal memos – inside large multistory office buildings where safety and convenience are the number one priority. True to Fitzgerald’s thoughts on intelligence, building owners and facility managers are encountering on average 15 low-voltage applications on multiple networks and must ensure the ability to function toward a healthy, happy environment for tenants. Instead of having those network cables fighting for space inside the enterprise backbone and data center, why not get as many of those networks as possible functioning on one infrastructure? That’s putting communications, fire/life/safety monitors, heating ventilation air conditioning (HVAC) systems, security and other IP-enhanced devices or systems onto a single easily controlled and monitored infrastructure of copper, fiber optic and coaxial cabling. Now that would be a real masterpiece.

**Fewer Hands Make Lighter Work?**
By taking a proactive approach to alleviating the segregation that multiple low-voltage applications can bring, an intelligent building attempts to unify all of the systems on one converged network and has the ability to eliminate potential problems down the road. It’s not a new concept, but it’s becoming a trend that many building owners are turning toward. Throughout the building’s existence, 75 percent of its cost will be from ongoing maintenance and operating expenses. Many of the building’s costs relate to the applications that provide functionality to the building. The voice, video and data communications necessary for most competitive business can be placed on the same network cabling infrastructure as video surveillance, elevator and lighting control. When all of these applications work separately, it has the potential to increase operational costs at the end of the month. With a single backbone supporting all of these systems, building operations can work together toward the most energy-efficient and cost-effective results.

The reduction of energy costs is one way intelligent buildings can create cost savings. In 2002, the Continental Automated Building Association (CABA) released its independent results in the “Technology Roadmap for Intelligent Buildings” report. From its findings, the association concluded that, “intelligent buildings apply technologies to improve the building environment and functionality for owners, property managers and occupants, while controlling costs. Improving end-user security, comfort and accessibility all help user productivity and comfort levels. The owner/operator wants to provide this functionality while reducing individual costs, and technologies make this possible.”

In addition, the United States Green Building Council (USGBC) found that 70 percent of America’s electrical consumption comes from buildings. Intelligent buildings can help reduce those numbers. New IP-enabled HVAC systems control and stabilize the temperature at a comfortable level without wasting energy. Also, installing smart IP-interconnected systems can control energy usage by automatically turning the lights off when a tenant leaves a room or an area. The building automation system also can be set to conserve energy during off hours. Additionally, when accessing the building during off hours, an intelligent building can recognize a tenant upon his arrival. The intelligent building features can turn on lights in certain areas and control the temperature exclusively in certain zones without wasting energy on unused areas of the building. While building owners keep costs down, the features provide convenience for the tenants.

Convergence also reduces operational costs. By strengthening the access control features on a building, facility managers limit the amount of security personnel needed to maintain a safe environment. Also, IP-video surveillance helps with the ability to cover a large service area from a centralized location. Intelligent buildings also can detect potential network problems before they occur. With all of the building’s systems under the same infrastructure, real-time intelligent patching solutions can monitor the network 24/7. If a faulty connection begins to cause a problem, the network notifies IT professionals of the issue and its location before experiencing network downtime, thus saving the building owner the expense of a larger problem.

Whether it’s converting the building’s current low-voltage systems into a converged network or making plans to bring intelligence into future real estate investments, an intelligent building will pay huge dividends throughout the building’s long lifespan.

**A Safe Choice – Literally**
Operating an intelligent building also refers to important building automation features like the safety and well-being of each person that enters. As crime rates and the threat of terrorism increase, business owners have a heightened awareness of potential security threats. The safety and security of the building’s inhabitants is the top priority for all companies. If an accident or disaster occurs at the workplace, employees want to know that safety measures will be taken swiftly. Intelligent buildings can provide a calming effect by providing tenants with safe solutions.

With intelligent buildings, the approach to security is transitioning from a reactive-to-proactive position. Building access can help eliminate security threats before they even step foot in the building. Access to certain areas during the day or after hours can be limited to certain personnel through card readers or biometrics. While gaining entry, IP-surveillance cameras at key points throughout the building can help identify potential security risks and eliminate unwanted practices like “tailgating” – when individuals follow a tenant in once proper building access has been granted. Similarly, cameras also can be used externally, enabling tenants to feel safe both in and around the building.

Fire safety is a strong example of how a building can benefit from a converged network. In an older building, smoke detectors alert tenants of the presence of smoke, while tenants use the pre-planned emergency exit paths to head for safety. In an intelligent building, the fire control subsystem communicates with the HVAC system, automatically closing all air vents or ventilating smoke outside. In addition, the building access control system is notified of the situation and unlocks all doors for an easier exit. Digital signage also can be used to direct the tenants to exits away from the potential hazard area. While no one can predict an accident or life-threatening moment and where it will take place, it’s good to know that the intelligence of the environment can evaluate the situation and help lead people to safety.

**The Elegance of Intelligence**While the intelligent building harnesses technology, the converged network also can positively affect productivity and comfort in positive ways. With over half of the average American’s day being spent inside of a building, improvements to daily surroundings should have a direct impact on the quality of life tenants lead each day. When building owners and facility managers take extra steps to provide comfort and convenience for tenants, they will have no problem retaining current tenants and increasing the demand for office space inside the intelligent building.

Temperature and lighting can impact the workday of an employee. The USGBC reports better temperature control enhances productivity by 3.6 percent. The study found that cold workers make more errors, which leads to a 10 percent decrease in productivity. Optimal temperatures have been known to increase student test scores, production in factories and, most importantly, productivity inside office buildings. The USGBC also reports that high-performance lighting can increase productivity by 6.7 percent. Corporate executives attempting to maximize their employee potential can rest assured that the lighting in an intelligent building will not only be energy efficient, but also conducive to a learning environment.

Network communications capabilities also can increase productivity levels at the building. Tenants utilizing the high-performance network can take advantage of voice, data and video capabilities when interacting with their own clients. A converged network has the ability to handle all business needs to remain competitive in diverse corporate markets. Comfort and productivity can mean the difference in whether or not tenants renew their current lease.

**The Leap Toward Intelligence**
When something goes wrong inside the building, building owners and facility managers don’t feel the immediate impact – their tenants do. Numerous vendors supplying the multiple low-voltage applications find it difficult for building management to maintain each system, let alone stay on the same page about each network. Providing the building with intelligence has never been so critical and affordable. Any building innovation that simultaneously reduces cost over time, while also enhancing building performance, has tremendous appeal. Whether the building’s design calls for copper, fiber optic or coaxial cabling, leaders in building automation systems understand the need for common protocols and interfaces as a growing number of systems ride on top of structured cabling solutions that provide integrated networking and connectivity.

Many of the devices installed inside the buildings can benefit from a common wiring platform that enables them to communicate on the network. Convergence alleviates previous constraints of multiple wiring systems. When it comes down to intelligence, it’s simple. An intelligent building reduces energy and operational costs, while adding luxury, safety and convenience. When considering future network infrastructures, expect the smartest answer to be an intelligent one.