**OPPORTUNITIES THAT EXIST IN AN INTELLIGENT BUILDING**

Because we are only at the onset of implementation, it's impossible to know all the ways in which intelligent buildings will make opportunities owners, property or facility management professionals, and end-users. The experiences of early adopters, however, have uncovered the following advantages :

* ***Tenant attraction and retention***

A significant benefit to the building owner is the expectation that intelligent buildings will get above-market rents, have lower vacancy rates, and reduce turnover

* ***Lower operating costs***

Because integrated buildings are also efficient buildings, operating costs are significantly lower. More accurate monitoring and control of energy-intensive systems like HVAC and lighting help keep costs in check. At the entirely new, 500,000-square-foot campus of Ave Maria University, during the design phase, consultants overshot the estimate for the cost of operations (including staff and building costs) by $600,000 per year. "I'm operating at about $3.15 per square foot for utilities across the board. The estimated cost was between $3.60 and $4.25, based on our architecture. That's including the outside utilities as well," says Mehaffey. Here, integrated systems made a bankable difference.

* ***Energy metering***

"It's very, very common in buildings to have no information, other than the electric bill, on electrical distribution and electrical metering," says Ehrlich. This is an area where intelligent buildings really shine. Integrated systems can track and automatically invoice tenants for their energy use. At Ballantyne Village, a mixed-use (retail, office, entertainment) facility in Charlotte, NC, intelligent-building systems enable energy sub-metering, and tenants are re-billed for the precise amount of energy they use - all without the need for the power company to install and monitor individual meters.

* ***Fast and effective service***

Intelligent building technologies give building management professionals the tools they need to better serve tenants, occupants, and users. Accessing building systems via the Internet makes it easier for facilities professionals to answer questions and monitor building performance off-site. Problems are identified early and solved immediately. "It's a really fabulous tenant relations/property management tool," explains Nancy Cleveland, senior vice president and director of sustainability, BPG Properties Ltd.

* ***Tenants can file work orders in a Web-based tenant services system***

The Irvine Co., owner of One America Plaza in San Diego, is using its building-owned wired and wireless network to better service tenants in its 600,000-square-foot, multi-tenant skyscraper. Engineers carry Web tablets and pocket PCs to eliminate much of the paperwork typically associated with work orders, and to accelerate their response time.

* ***Simplified property management***

At Ave Maria University, maintenance crews don't take pressure readings or adjust valves by hand. Adjustments are made from the network operations center with a few simple keystrokes. The result is a leaner facility management operation. Support for the university's optical transport backbone, the voice/data network, two data centers with approximately 75 servers, a $23 million chiller plant, access control, audiovisual, cable television, and power management is managed by a team of eight, including Mehaffey. Only two of those people are exclusively responsible for the facilities-related

systems.

* ***Enhanced life safety and security***

A fire situation is perhaps the most commonly cited example of how integrated systems are beneficial. The alarms sound and other building systems begin to react: Exhaust dampers open, the IP paging and intercom system issues instructions to occupants, the access-control system unlocks doors for evacuation, and CCTV cameras provide emergency responders with a view of the fire.

 Intelligent buildings offer life-safety enhancements in other emergencies as well. An

 earthquake sensor or signal from the national geological service can be connected with

 building systems for facilities in seismic zones. "In the event of an earthquake, an

 integrated building can automatically shut off gas lines, shut down computers, and

 automatically notify occupants of the earthquake," Ehrlich says. Security becomes

 mobile in intelligent buildings. Wireless surveillance cameras and a Web-enabled

 security system at One America plaza allow guards to view live video from a laptop or

 pocket PC.

* ***Anticipation of future technology***

 While no one can foresee where the future of technology is going, experts predict that

 a building with an IP backbone will be ready to support almost anything that comes

 onto the market. And, with tenant needs changing, it's important to have a building

 flexible enough to adapt quickly. 1000 Continental, a 200,000-square-foot, Class-A

 office building in King of Prussia, PA, was built by BPG Properties Ltd. With an enhanced

 IP core and shell. In that building, adding services for a tenant is simple. Assuming that

 a space is already built out, a tenant can move into 1000 Continental and have voice,

 data, and communication systems up and running almost immediately - forget waiting

 30 to 45 days for a telecomm provider.

* ***Additional revenue***

 Intelligent buildings can offer tenants wired and wireless high-speed Internet, and other

 Communications services that will maximize the building's revenue per square foot.

 One America Plaza provides free Wi-Fi as an amenity to all tenants and visitors, and

 offers bandwidth as a fourth utility. The facility's Building Optical Network enables

 tenants to purchase bandwidth of up to 100 megabits per second (60-times faster than

 a typical T1 connection). Wi-Fi, integrated paging, Bluetooth, digital signage, and rich

 media communications can be made available for a fee (or free) to differentiate the

building.

* **Single point of contact for requests**

 Since the technology and systems engineering department at Ave Maria University

 handles both IT and facility-related services, students and faculty aren't confused about

 who addresses their problems. "If they need their ID [smart] card fixed or their laptop

 repaired, they go to the same shop. If they're locked out of their rooms or can't get on

 the Internet, they come to the same place to get support," explains Mehaffey.

 "That's created a quality of life for students that has been extremely well received.

* ***Environmentally friendly.***

Careful measurement and monitoring of energy use for the purpose of reducing consumption is a hallmark of green and intelligent buildings. While it's possible to have a green building that isn't intelligent (e.g. using recycled carpet, low-VOC products, etc.), because of the efficiencies that smart technologies provide, all intelligent buildings are some shade of green. For example, at 1000 Continental, a daylight-harvesting system could work in concert through the IT backbone with interior lights and occupancy sensors to provide optimum light levels and save energy use.

* ***Publicly Report***

To be able to publicly report measured and control environmental information.

* ***Proactive Approach***

Demonstrate a proactive approach to environmental issues, health and safety.