the hammersmith group
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Clicks & Mortar:

Using technology to enhance the experience of a space

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Technologies that improve the process of constructing, operating, or managing buildings tend to be invisible to the end user. These systems have little or no effect on how residents and visitors interact with intelligent buildings. In order to be relevant to the end user, building technologies need to enhance the overall experience of being in the space.

The average person walking into a building cannot tell whether it was efficiently constructed using prefabricated sections, or whether it was stick-built using conventional techniques. They cannot tell whether the building is heated by an ecofriendly geothermal system or from fossil fuels. They cannot tell whether a building's technologies are discrete or interconnected.

The technologies that make a difference to the end users of a space must increase comfort, convenience, and efficiency for those users. Above all, the features must be seamless and intuitive. The technology should reduce cognitive load: it should be one less thing to worry about, rather than one more thing to manage.

In order to create a competitive advantage for the building, and generate a return on investment for the building owner, building technologies need to address real problems or issues for the end users. For residents, a comfortable, customized, and efficient environment acts as a barrier for relocation. This, in turn, can improve the bottom line for building owners by reducing tenant turnover and the associated brokerage fees, vacancy loss, and tenant improvement charges.

"In a connected home, the innovations that are most valuable to consumers are those which help them save time, energy, or money, or which provide peace of mind," said Levi McConnell, Director of Interactive for New York City-based Pace Advertising, one of the leading marketing and branding firms for real estate. "During the predevelopment process, it is critical to ask whether the technology is solving one of life's small problems for the consumer."

"Some problems can be solved by design, other problems by technology," said Jon Rygh, Vice President of Pace. "The goal is to solve the problem, not necessarily to automate everything."

This approach has been embodied by two pioneers, Fraser Hickox and Andrew Carle, who have demonstrated how technology can successfully serve the needs of a range of end users — from luxury hotels and residences, to senior and affordable housing.

The Peninsula Hotel Group is recognized as one of the pioneers in using design and technology to improve the guest experience. Many of its innovations have come to be regarded as industry best practices. The Peninsula Tokyo opened in September 2007 showcasing a number of ideas which will likely filter out into different classes of multifamily projects.

Fraser Hickox was the General Manager of Research and Technology for the hotel group during the launch of the Peninsula Tokyo. Hickox's innovations were informed by a practical approach of anticipating the needs of the hotel's guests. He observed the behavior of hotel guests, listened to their stories, and tried to implement design and technology-based solutions to improve their experience at the hotel.

Le Corbusier famously said that design is intelligence is made visible.[1] Perhaps today he would restate that as good design is courtesy made visible.

Worldwide, a number of innovative projects, including the Peninsula Tokyo and Seattle's Hotel1000, are making compelling demonstrations of the benefits that result from buildings that incorporates a single, integrated network.

At the device level, residents can communicate directly with individual appliances, or vice versa: the washing machines at Tishman-Speyer's StuyTown in Manhattan will text users when their load is done.

At the building level, residents of Mali Kolektiv's B2 complex in Belgrade, Serbia can remotely control heating and cooling via a web interface. Seattle's Hotel1000 takes this a step further, by using the robust information platform to provide guests with free local, long-distance, and international calls via VoIP (voice over internet protocol).

[1] This subject is explored further in *Design is courtesy made visible:* http://thehammersmithgroup.com/images/reports/courteous.pdf

On the most ambitious scale, Gale International and POSCO E&C are developing one of the largest private developments in the world: a planned city of 100M square feet on 1,500 acres near Seoul, Korea. The US$35Bn project, New Songdo City, will be a showcase for both ubiquitous computing and ecofriendly features.

It became possible to implement many of these new features as a result of simply aligning individual building systems to make them more communicative and responsive. According to Can Habib of Cisco's Connected Real Estate Advisory Service, conventionally-constructed buildings have roughly 30 discrete systems, including building administration, cooling, entertainment, heating, intercom, Internet, lighting, telecom, and security. Each appliance or system requires its own network using proprietary protocols. Combining these systems into a single Internet protocol (IP) infrastructure eliminates costs, reduces construction time, reduces management expenses — but most importantly, allows these various systems to communicate with each other. Fully-integrated communications among these formerly disparate systems will become the foundation for applications that transform the ways we relate to buildings.

For example, at the Peninsula Tokyo, the phone and the entertainment systems are connected and responsive to each other. As a result, the system automatically lowers the volume of music or television when the phone rings. If it is a late-night call, the bedside lamp gently glows while the phone is in use. This is a synergy that would not be realized if the entertainment, phone, and lighting were simply unconnected devices that could not respond to each other.

Andrew Carle applies similar insights to a very different housing market. Carle is the founding director of George Mason University's program in Assisted Living/Senior Housing Administration. Prior to starting the program, he had developed and managed senior housing, and was the CEO of a rehabilitation hospital. Carle is credited with creating the concept of university-based retirement communities, and also coined the term "nana technology" to describe innovations which improved the quality of life for senior citizens.

Carle emphasized that technology will play a critical role in developing the next generation of senior housing. "It's not about technology for its own sake. It's not about bells and whistles. Developers need to understand the needs of the senior market, and to incorporate technologies which meet those needs in a cost-effective way."

For example, the gap between the growing number of seniors and the shortage of nurses is driving up the cost of healthcare. Technologies that enable seniors to 'age in place' can save money by delaying an expensive and disruptive move to a senior housing facility.

Second, falls are the primary cause of death for people over 75. The next generation of senior housing may incorporate RFID sensors embedded in floors or carpets. These sensors can detect falls and, if the building's systems are interconnected, can alert the front desk to inquire whether the resident is alright. If there is no response, an EMT can be dispatched easily. By creating efficiencies and reducing response times, this sort of innovation can save lives.

More sophisticated building technology can also improve the life of seniors in other ways. Senior housing built with a robust IP platform not only creates operational efficiencies for the management company, but can also deliver a number of amenities to residents. For example, IP radio and television can connect residents with programming in their native language. IP phones, or those with a built-in Skype function, can be a cost-effective way of helping them communicate with their families.

Hospitality and senior housing are early adopters and influencers of new technologies

The earliest adopters of intelligent building systems and smart devices will likely be large commercial users such as casinos, hotels and resorts, which can realize economies of scale, as well as specialized users such as senior housing. Both of these markets bring technologies into contact with a broad range and ongoing flow of people, who can experience the benefits firsthand.

Hospitality is a critical vector for showcasing new technologies, as many people are first exposed to new products and innova-

tions in hotels. Senior housing is also an early adopter of housing technologies because these innovations meet pressing needs, and can influence the broader adoption of these innovations into other markets. Because caregivers and families of the residents are exposed to the benefits of these technologies, "these kind of applications will have a viral marketing affect," according to Alex Soojung-Kim Pang of the Palo Alto, California-based Institute for the Future.

The diffusion of innovation will likely parallel the adoption of Universal Design beyond the audience for which it was originally intended. Conceived as a way to increase independence for people with disabilities, it has since become more broadly adopted as awareness of its benefits has increased. For example, ramps intended for people in wheelchairs are equally useful for mothers with strollers.

Incorporating technology into multifamily developments

There are many opportunities for developers to incorporate some of the best practices from these and other pioneering projects into a variety of more mainstream developments.

It is critical for developers to consider that demographics and housing preferences are going to shift significantly. Multifamily rentals, luxury condos, and hotels being built now will, over the course of the building's lifecycle, be occupied mostly by people who came of age during or after the Internet revolution. Developers need to understand their changing preferences in order to meet or exceed the expectations of these markets.

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