

# New Tools Activate the Urban Environment

As cities embrace promising new technologies, innovative ideas have prompted an exploration of the potential of virtual architecture.

LE CORBUSIER, THE iconic French architect, designer, and urban planner, once observed, “The materials of city planning are sky, space, trees, steel, and cement, in that order and in that hierarchy.” Noteworthy in that observation is the degree to which the emergence of 21st-century technologies has reinforced that hierarchy: today, sky and space are more important than ever. Even in the past few years, previously unimaginable new technologies are giving architects and city

planners a glimpse of the large-scale possibilities of virtual architecture.

The driving force behind this evolution is the dramatic growth of municipal wireless networks and the implementation of high-speed mobile data networks as both a recreational resource and a civic utility. While technological limitations, economic uncertainties, legislative hiccups, and public/private wrangling have thrown up periodic roadblocks, from Spokane to Singapore, Pittsburgh to Paris, municipal wireless service is proliferating.

As the power of this new layer of coordinated, flexible, interactive, and possibly transformative design becomes better understood, the traditional definition of architectural design may need to be expanded. Blueprints and buildings have been joined by electronic billboards and broadband applications. Architects and urban planners are finding today that creating public spaces can involve the corresponding development of compelling virtual space.

The precise nature of municipal wireless systems varies widely—from public networks that provide what is essentially citywide wireless broadband access, to secure high-speed private networks aimed at providing police officers, firefighters, and other public safety officials with a coordinated set of new tools. The scope of service ranges from limited part-time coverage in specific regions to expansive and extensive service networks with 24/7 accessibility. While the specific technologies differ as well, the basic model of a wireless mesh network consists of a series of redundant and interconnected nodes to provide optimal coverage, signal strength, and network flexibility.

But while a great deal of attention has been devoted to debating and

discussing the mechanics of municipal wireless service, it is only recently that the potential of a flexible and coordinated civic infrastructure of wireless data and multimedia components has begun to be realized. From information, entertainment, and retail enhancement to a wide range of wayfinding and public safety applications, cities are working to capitalize on the new virtual tools at their disposal.

Boston, for example, made news last October with the announcement of a new iPhone application called Citizen Connect, which provides a framework for complaint management and resident/government communication. Citizen Connect not only makes it possible for residents to report local problems and communicate concerns quickly and efficiently, but also allows users to take photographs of the problems and send those images to city hall for review. Even better, the iPhone’s global positioning system (GPS) technology means that problems can be pinpointed geographically, easing a prompt response.

In New York, officials announced last May that the New York City Wireless Network (NYCWIn) is now on line. Developed as part of a partnership between the city’s Department of Information Technology and Telecommunications (DoITT) and Northrop Grumman Corp., NYCWiN has been touted as a milestone in municipal first-responder communications.

The high-speed mobile data network encompasses 300 square miles (775 sq km) and enables data transfer at speeds up to 100 times faster than what was previously possible for city employees. During an emergency, city service and safety organizations will be able to transfer large amounts of data and tap into a network that makes it possible to do everything from



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**Intellistreets, a system designed to provide developers, urban planners, and city officials with new tools to manage energy consumption and communicate with residents, visitors, and public safety officials, uses light poles as the platform for an array of lighting, security, and multimedia applications.**

download fingerprints and mug shots to share real-time streaming video and engage in data communications with incident managers from city government and public safety agencies. To facilitate mobile access, DoITT and the city police department are installing wireless modems in 1,800 patrol vehicles.

Virtual innovations have also begun to spill into the physical environment. Integrating this next generation of virtual architecture into the built environment in ways that elevate and enliven public spaces is proving to be a new frontier in urban place making. One concept is Intellistreets, a system designed to provide developers, urban planners, and city officials with new tools to enhance public safety, manage energy consumption, communicate with residents and visitors, and connect commercial, residential, hospital-ity, and entertainment components.

Intellistreets uses a feature found on city streets around the world—the light pole—as the platform for an array of lighting, security, and multimedia applications. Connected with its own wireless mesh network and controlled with a user interface accessible via any remote internet connection, Intellistreets offers a wireless, programmable digital infrastructure with lighting, multimedia, information, emergency, security, and revenue-generation applications in a modular delivery method that integrates into the existing architectural infrastructure.

The Intellistreets base unit consists of a “smart” light pole with integrated programmable audio-visual components connected via a wireless mesh, with each pole’s “brain” operating independently but in coordination with the remote programming system. The system’s core lighting system offers controllable and programmable light-sensing “intelligent” lighting capabilities, with a wide range of brightness and color options. The system can contribute significant energy savings



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through use of energy-efficient light-emitting diode (LED) bulbs and the automatic dimming and illumination of lights; it also can enable city officials or property managers to coordinate themed public lighting with holidays and other special events.

Elements of the system are in place in a number of urban environments, including Greenfield Village in Dearborn, Michigan, a historic district that used Intellistreets to provide background music while disguising the intrusion of modern technology through use of speakers hidden in the light poles. Branson Landing in Branson, Missouri, a retail and entertainment destination, uses the system’s remotely programmable themed lighting to distinguish different districts, to provide red and green lighting during the holidays, to provide brighter lighting for certain districts in the day and more subdued lighting in the evening, and to highlight a fountain at timed intervals.

Because the network is operated via a centralized or decentralized remote-access control system,

**Branson Landing in Branson, Missouri, uses Intellistreets’ remotely programmable themed lighting to highlight retail and entertainment districts throughout the day and night.**

Intellistreets can also function as part of a coordinated emergency response network. Emergency lighting options and illuminated way-finding displays can provide public alerts and even direct pedestrian and vehicular traffic. Concealed speakers at the base of the pole or in the luminaire can provide emergency alert broadcasts.

The Intellistreets platform is compatible with a host of future applications, including sponsorship, advertising, and branding through the use of targeted audio and digital signs providing site-specific information about retail sales and special events. It also has the ability to capture information such as foot-fall counts and provides other data-mining possibilities. LED digital video displays offer revenue-generating potential for developers and municipalities because signs can be customized

to suit a specific tenant, event, or promotion. In emergency situations, they could be used for AMBER alerts and the like. Additional security and public safety uses could include video surveillance and digital camera capture, severe-weather alerts, and chemical, radiation, and environmental monitoring.

Presenting an adaptive and flexible audiovisual infrastructure, this new generation of virtual architecture provides architects, designers, and urban planners with new tools to activate and animate urban environments—tools that can help transform pedestrian urban corridors into interactive environments that promote security and a sense of community. **UL**

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