



Smart Community Infrastructure Strategies

Hybrid Fiber and Wireless Solutions for Master Planned Communities

What makes a Smart Community?

Smart communities use information communication technologies and data to be more efficient, solve challenges, and create new opportunities. They enjoy cost and energy savings, improved service delivery, better quality of life and a reduced environmental footprint.

Smart communities advocate for the integration of technology and data infrastructure, promote digital technologies to increase the capability of existing infrastructure and services, and champion citizen involvement and citizen-focused service delivery.



Smart Community Attributes

No two smart communities are alike, but many share familiar characteristics. While each may have different reasons for wanting to be smart, all smart communities share common attributes; they all are powered by smart connections, smarter energy infrastructure and the data collections and analytics to make smart decisions. Smart communities are driven by "Digital Amenities" which include:

Smart Street Lighting

Smart street lighting helps communities save energy, lower costs, and reduce maintenance—allwhile better serving citizens. Smart street lighting also can help communities reduce crime and make parking lots and roadways safer through improved visibility.

Smart Transportation

Smart transportation integrates electrification and digitization with existing community systems to improve safety and mobility and to provide greater access to community services. This includes electric vehicles (EVs), EV charging infrastructure, smart parking, autonomous vehicles, and technologies that improve traffic flow.

Smart Buildings

Smart buildings reduce energy waste and operational costs by measuring energy use, pinpointing operations and maintenance problems, automating lighting and thermostats, and tracking building performance. This improves sustainability, saves energy, and helps create a better environment for building occupants.



Distributed Energy Resources

Distributed solar and wind, small natural gas units,

EVs, energy storage, and energy management technologies—all connected by the energy grid—are helping communities improve sustainability, efficiency, and reliability.

Physical Security and Access

A comprehensive security and access management system for a smarter and safer community. This includes live view and stream services, community and building access controls for residents, tenets, guests and contractors, panic buttons and special events and calendar control.

Smart Water

Smart water management systems can provide a more resilient and efficient water supply system, reducing costs and improving sustainability. Smart technology can change conventional water and wastewater systems into instrumented, interconnected, and intelligent systems.

Health and Wellness

Intelligent environmental sensing, the use of digital technology, behavioral science and community stakeholder engagement can create a smart health community that empowers individuals to proactively manage their health and wellbeing.

Cyber Security

Smart communities face many risks as digital and physical infrastructure converge. To help address this challenge, communities should embed cybersecurity and privacy principles in each stage of their development.

Data Analytics and Intelligent Services

By analyzing data generated by sensors and monitors, communities can monitor and manage energy use, pedestrian safety, traffic flows, air quality, and more. With the help of intelligent services, such as interactive information kiosks and public Wi-Fi, communities offer residents greater connectivity and access to resources. These technologies and services enable communities to increase efficiency, improve community services, and enhance quality of life for residents and tenants.

Smart Community Infrastructure Model

A vibrant and sustainable community is an ecosystem of "capability layers": people, organizations, policies, laws, and processes integrated together to create an adaptive, responsive, and resilient community. While technology is a critical enabler, it is just one of many foundational capabilities. These capabilities must integrate and coordinate with each other to carry out its mission.

Value Layer

This is the most visible layer for community residents, businesses, visitors, workers, students, tourists, and others. This layer is the catalog of "Digital Amenities" or "use cases", centered around the outcomes and offered by value creators and consumed by the community stakeholders.

Innovation Layer

To stay relevant, value creators in the smart community must continuously innovate and update its services for its stakeholders. Smart communities proactively facilitate this through a variety of innovation programs including labs, innovation zones, training, workshops, skills development and partnerships.

Governance, Management, and Operations Layer

Smart community management models must integrate a new ecosystem of value creators and innovators. They must plan, support, and monetize new business models, processes, and services. They must upgrade their infrastructure and management processes to support "smart" services. Finally, theymust measure the performance of the community with a new set of metrics.

Policy, processes, partnerships, and Financing Layer

The smart community does not just magically appear one day. An entirely new set of engagement models, rules, financing sources, and partners are required to build, operate, and maintain them. Communities must develop a new set of "smart" competencies in order to get and stay in the "smart community game".

Information and Data Layer

The lifeblood of the smart community is information. The smart community must facilitate this through open data initiatives, data marketplaces, analytics services, and monetization policies. They must also have programs that encourage data sharing and privacy policies to protect what and how data is gathered.

Connectivity, Accessibility, and Security layer

People, things, and systems are interconnected in the smart community. The ability to seamlessly connect all three, manage and verify who and what is connected and shared, while protecting the information and users is crucial.

Technology infrastructure Layer

Most people automatically think of technology when talking about smart communities. The smart community technology infrastructure must scale beyond the traditional users and support a new class of value creators and community/user stakeholders

Technology Infrastructure Model

The smart community begins with a robust and scalable telecommunication infrastructure plan. Telecommunications services, both wired and wireless, are the means in which people and technology connect. This includes hub sites and data centers, conduit, fiber optic cables, street furniture and antenna attachment facilities and wireless radios and supporting equipment

The Technology Infrastructure Model takes a holistic view of all infrastructure required to develop a flexible and scalable connectivity network in which the smart community and broadband service will utilize.



Conduit and Hub Sites

Conduits, hub sites and data centers, utility poles and wireless antenna attachment facilities is foundational to any smart community initiative.

Fiber Optic Cables

Wireless and smart communities are built on fiber networks. Designing a fiber optic network that will support business and residential broadband services, 4G/5G wireless services, Wi-Fi and smart community connectivity is critical. Having the right routes, splice tap locations and cable sizing is important for a flexible and scalable smart community

Wireless Networks

Wireless networks come in a variety of flavors from commercial 5G cellular services to Wi-Fi to Private 5G networks for Internet of Things (IoT) and sensor / camera / machine connectivity.

Broadband and Mobility

Understanding consumer needs coupled with economic considerations will determine the means in which broadband services and connectivity are delivered. This will include both indoor coverage (and capacity) for commercial offices, industrial, retail and residentials services and outdoor services for mobility, IoT and SCADA devices.

"Digital Amenities"

Smart community applications or "Digital Amenities" are limited by our imagination. These can range from energy and emission management to security and access control to children tracking and monitoring and everything in between.

The Citiro Difference

A Trusted Advisor and Partner

Citiro specializes in bringing smart community infrastructure and applications to master planned communities. We are not your typical vendor; we collaborate with our Client / Partner to identify the project goals and objectives including business and residential, campus-wide, broadband services, IoT and other project appropriate "Digital Amenities".

Citiro provides our Client / Partner with smart community infrastructure consulting and advisory services. We develop with our Client / Partner a plan whereas Citiro would capitalize, install, manage and operate the fiber optic network, typically utilizing Client installed conduit and hub sites. The fiber optic network supports all wired and wireless broadband services and "Digital Amenities" campus wide.



Limitless Flexibility

Citiro provides a turnkey, future-forward solution that includes flexible financing and deal structuring models. We provide a range of options to deploy super fast, super reliable internet infrastructure and digital amenities. Our clients/partners are able to maintain control and flexibility over their networks, technology assets and digital amenities.

Financial Results

Citiro essentially allows our Client/Partner to leverage the technology infrastructure to not only improve the attractiveness of their project, but it's financial performance as well. By decoupling infrastructure and amenities, our partners multiply their revenue streams, generate stronger returns and outperform the competition every time. Our mission is to help our Client/Partner sell/rent residential, commercial, retail and hospitality units faster and for a higher price.



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