



AS PEOPLE RETURN TO CITIES, LEADERS LOOK TO TECHNOLOGY TO MAKE METROPOLITAN LIVING GREENER AND EASIER. KIOSKS ARE A PROVING A CRITICAL TOOL IN THEIR KIT.

# Kiosks and the Emergence of the Smarter City

HOW SELF-SERVICE TECHNOLOGY IS HELPING URBANITES MOVE INTO THE 21ST CENTURY

In what research and analysis firm Brookings is calling the "[decade of the city](#)," large metropolitan areas are enjoying a renewal of growth and vibrancy that began in 2010 and looks set to continue until at least 2020.

The firm, citing U.S. Census data, says that "so far in this period, the annual growth rates of cities with over half a million people were double the average annual rate between 2000 and 2010 ... and the combined urban cores of the nation's major metropolitan areas continue to grow at faster rates than their surrounding suburbs."

The trend is welcomed news for city officials with depleting coffers and environmentalists who appreciate the potential efficiencies of urban living.

That said, accepting so many people so quickly into such dense areas brings its own issues.

- Yes, the potential for efficiencies exists, but what are the best ways to realize them without exceeding budget constraints?
- How can citizens enjoy the most convenient access to public transportation?
- As new residents take root and the number of out-of-town visitors grows, what can be done to help make their interaction with the city simple and pleasant?

Around these questions has developed the concept of a "smart city."

A loose term advocated by several civic-minded groups, it generally refers to the set of technologies and applications that, interpreted by Frost and Sullivan, support the following eight key aspects of "smartness":

1. Governance
2. Energy
3. Building
4. Mobility
5. Infrastructure
6. Technology
7. Healthcare
8. Citizenry

More specifically, in "[From Intelligent to Smart Cities](#)," authors Mark Deakin and Husam Al Waer define a "smart city" around:

- The application of a wide range of electronic and digital technologies to communities and cities
- The use of Information and communication technology (ICT) to transform life and working environments within the region
- The embedding of such ICTs in government systems
- The territorialisation of practices that brings ICTs and people together to enhance the innovation and knowledge that they offer.

Other observers would add the the Internet of Things (IoT).

Simplest yet, the Smart City Council offers this definition: A smart city is one that "uses information and communications technology to enhance its livability, workability, and sustainability."

Kiosks and other examples of self-service technology (telephony, smart phone apps) owe their growth in large part to the efficiencies they bring to otherwise cumbersome tasks. Wayfinding. On-the-fly research. Transportation scheduling and ticketing.

In cities where buses or light rail are still a small part of the public transportation mix, people may not immediately see the potential connection between high-tech kiosks and old-fashioned, low-tech bus stops or train stations.

Truth is, however, that as demand for these conveyances continues to increase, so too does the opportunity for self-service technology and digital signage to provide valuable services for riders and pedestrians alike, not to mention their ability to pay for themselves and even become revenue-positive by hosting third-party advertising.

Recent trends in public transportation, doubtless tied to the reverse exodus to cities, have so well made the case for this kind of deployment that it's no wonder several municipalities have already partnered with technology companies like Olea Kiosks to position terminals across their grids.

From Olea's white paper, "[Kiosks: A Turbo Boost for Public Transportation](#)":

*According to a study last year by the Project for Public Places, Americans made 10.7 billion trips on public transportation in 2013. Representing a 37 percent increase over 1995, the number of trips was at its highest since 1956, when American culture began its push toward suburbanization and the ritual of the solo daily commute in a car caught on. What's more, said the study, the number of miles Americans travel in cars or trucks is down nine percent in the last decade.*

That's why so many cities that pursue the ideals of efficiency and convenience nested in the smart city concept turn to solutions providers like Olea Kiosks not only for hardware, but for guidance on how best to structure a world-class application and deployment.

## The Smart City Challenge

The move to make cities "smart" is strong. Not only are there inherent rewards, but outside incentives can provide meaningful support for initiatives that demonstrate the greatest potential to realize smart city potential.

In June 2016, the U.S. Department of Transportation announced that Columbus, Ohio, won the agency's \$40 million [Smart City Challenge](#), with an additional \$10 million coming from Paul G. Allen's Vulcan Inc., a philanthropic organization established by the Microsoft co-founder. The \$50 million supplemented the \$90 million that the city has already raised from other private partners to carry out its award-winning plan.



*Secretary of Transportation Anthony Foxx announces Columbus, Ohio, as the 2016 Smart City Challenge winner.*

Using these resources, Columbus will work to reshape its transportation system to become part of a fully-integrated city that harnesses the power and potential of data, technology, and creativity to reimagine how people and goods move throughout their city.

"The Smart City Challenge required each city to think about transportation as cross-functional, not in silos, but as a transportation ecosystem. The bold initiatives they proposed demonstrated that the future of transportation is not just about using technology to make our systems safer and more efficient – it's about using these advanced tools to make life better for all people, especially those living in underserved communities," said Transportation Secretary Anthony Foxx.

"While Columbus is the winner of the Challenge, we believe each city has come out of this process with a stronger sense of how to address transportation challenges with technology and innovation."

According to a D.O.T. release, the Smart City Challenge generated a significant amount of excitement and interest amongst cities. U.S. DOT received [78 applications in total](#)—one from nearly every mid-sized city in America.

The challenge called on cities to do more than merely introduce new technologies onto city streets, but in addition required them to boldly envision new solutions that would change the face of transportation in our cities by closing the gap between rich and poor; capturing the needs of both young and old; and bridging the digital divide through smart design so that the future of transportation meets the needs of all city residents.

Columbus was selected as the winner because it put forward an impressive, holistic vision for how technology can help all of the city's residents to move more easily and to access opportunity. Germane to the kiosk industry, it pro-

posed and has already begun deploying kiosks to provide public Wi-Fi internet access, transportation card top-ups and route information.

## Sample Deployments

Following are examples of “smart city”-style self-service and digital signage deployments. Readers should bear in mind that the principles executed here are not restricted to urban areas. Other types of entities that could benefit from the scheduling and wayfinding components include:

- **Large college campuses**, by helping students navigate campus, see campus updates, create their own emergency alerts. Public transportation information—so critical to commuter colleges—can be wired in. Monetization can come in part from third-party advertising, such as from campus eateries, bookstores, apparel shops and more.
- **Large corporate campuses**, where visitors and even employees may need guidance getting around. If the campus offers visitor shuttles, they can be summoned from these kiosks.
- **Mega-churches**. Some religious facilities—Southeast Christian Church in Louisville, Ky.; Lakewood Church in Houston, Tex.; Saddleback Church in Lake Forest, Calif.—have campuses with large, arena-like sanctuaries and often multiple supporting buildings for classes, youth groups, athletics and more. Even frequent attendees can become lost, and many potential visitors can be intimidated trying to navigate the church while dealing with the nervousness that can come from visiting any new church, let alone such a large one. Kiosks can be positioned conspicuously in parking lots and atria to announce schedules, point to classes and worship locations and even arrange to meet a church representative for one-on-one assistance.

Digital street enclosures are not new. Yahoo! and other companies wired bus stops a decade ago or longer to power kiosk functionality as part of elaborate marketing tools. What is new is that now the kiosks and digital signs are being championed by municipalities as part of their “smart city” initiatives, meaning the ultimate beneficiary of the deployment isn’t primarily a marketing budget, but the public at large.

**Kansas City, Mo.** In [partnership with Sprint and Cisco](#), the city deployed more than 50 blocks of free public Wi-Fi,

125 smart streetlights and 25 interactive kiosks. The Wi-Fi network connects to a broad range of smart city applications such as smart lighting, kiosks and sensor technology. Kiosks at local streetcar platforms and locations around downtown provide information about local businesses and events and offer new ways to access city services.

Plans call for 25 more interactive digital kiosks along the new streetcar line and nearby downtown locations for accessing city services, current events, transportation, local business information, public digital art, local history, and entertainment. A potential additional use for the kiosks is to allow citizens to initiate public alerts through them, akin to an old-fashioned fire alarm lever on a street box.

**Miami-Dade, Fla.** The city has negotiated a 15-year deal to install up to 300 kiosks with Wi-Fi hot spots at bus stops and Metrorail stations across the county, [according to a story](#) in The Miami Herald.

If the kiosks are anything like those deployed in a similar installation in New York City—without the infamous ability to access to porn through them—Miami-Dade citizens have something to look forward to: gigabit Wi-Fi, which is significantly faster than most networks, along with cell-phone-charging, 911-access, free phone calls from Vonage, and an interactive screen that can broadcast public announcements and information about local events and commonly accessed city services.

One third-party survey showed that when navigating in malls, 78 percent of respondents preferred kiosks over cellphones. —*KioskMarketplace.com*, June 2014

The city is also receiving a check for \$20 million for the privilege of making these deployments, with the installer believing the third-party advertising revenue will make the entire project meaningfully profitable. ([This story reports the controversy](#) about whether the signage skirts city ordinances.)

**Dubai.** The largest city in the United Arab Emirates is known for its tall buildings, tolerance for Westerners, tourism and opulent shopping. Now, thanks to its focus on smart city-like principles, it’s also garnering recognition for its self-service and digital signage deployments, all to benefit tourists and residents alike.

So far, more than a hundred bus stops in Dubai have been converted into Smart Shelters, [according to Gulf News](#). Each is equipped with free Wi-Fi, a smart kiosk, a mini mart and much more. The local transportation authority says there are plans to set up 400 more such stops.

Spread across 15 districts of Dubai, the smart shelters have been selected from the existing 656 air-conditioned bus stops located across the city, says the story. Visitors can pay utility bills, top-up certain pre-paid cards and purchase refreshments and snacks. Wi-Fi is available for only 20



minutes per IP address, reflecting the average 15-minute wait-time for a bus.

**Santa Barbara, Calif.** Just wading into the waters, this metropolitan area of about 400,000 people recently installed its first public kiosk, locating it at the city's Transit Center. According to a Kiosk Marketplace [story](#), the web-enabled unit serves up bus schedules, helps plan routes and also supports those who travel by car, foot or bike, with trip plans able to be sent to smart phones. Additional applications include Yelp reviews, news and weather. Third-party advertising can be placed to mitigate costs.

"ConnectPoint is the next step for transit agencies which are already providing passenger information via bus stop panels, system maps and websites," Rick Wood, CHK America's president and CEO, said in a statement. "Our interactive kiosk is an efficient way to deliver real-time bus information."

**San Diego, Calif.** Two years and \$21 million later, San Diego [announced in November 2016](#) that 11 new bus stations were operational across the downtown area.

A half-cent tax on public transportation tickets funded the high-tech stops, which includes new shelters, 16"-high pylons with digital signs and other upgrades. The goal of the project is make traveling by bus easier and to attract new riders.

The stations show real-time updates on how long it will take the next bus to arrive at the station. According to the story,

This information was already available on websites and mobile applications that provide real-time updates on bus schedules, as well as a text-messaging system that gives information about the wait at individual stops. ... but the new stations will make sure that more people are able to stay informed. Some riders, particularly tourists or people

who don't regularly use Rapid bus service, might not know which websites or apps to use to learn about bus schedules and delays, he said.

**Pittsburgh, Penn.** Last June, Pittsburgh's Port Authority [revealed its new wayfinding network](#) of kiosks designed to help riders better navigate the local public transportation system of buses and subways.

The system includes five touchscreens that passengers can ask for directions on how to reach their destination. In addition, says the story, the system includes "eight solar-powered devices at digital bus stops to provide real-time bus information; two digital bus stops with abbreviated maps and route frequency information for that stop; and 85 bus stop signs that include an abbreviated map and frequency (of route) information."

A Port Authority spokesperson called the kiosks and signs "a great step forward" as part of the city's larger strategy to support existing riders and attract new ones.

"If you're not a daily rider, it's not easy to find your way around," he said. "We think this will help."

### How to Make It Work

Olea Kiosks has deep experience in producing the rugged, hyper-connected kiosks demanded by related applications of Smart City principles. Our white paper, "[Kiosks: A Turbo Boost for Public Transportation](#)," details several deployments we designed for critical, high-performance roles.

- 33 kiosks for Canada's national rail system, VIA Rail. The 99-percent uptime kiosks enabled faster, more accurate service at busy stations and allowed the line to keep open stations that no longer were profitable enough to staff with people.

- Dallas-Fort Worth airport. Tightening security regulations and insufficient staff were creating unacceptable backlogs for international travelers at this critical hub. Olea developed the Automated Passport System a TSA-compliant kiosk solution that dramatically improved passenger throughput. In comparable year-over-year measurements, before and after deployment, wait-times decreased 42 percent (from 32.5 minutes to 18.8 minutes), even while passenger traffic continued to grow by 15 percent.

- The paper also details Olea's work for CLEAR traveller kiosks and JCDecaux airport kiosks.

Olea also has significant experience in the high-volume ticketing and wayfinding venue



When Dallas-Fortworth officials needed a way to help passengers move more quickly without compromising security, they turned to Olea Kiosks. Our security kiosk decreased wait times by 42 percent even while passenger volume by 15 percent.

of theme parks, recently completing a major roll-out for an internationally known amusement brand. More information can be found in our white paper, "[5 Ways Kiosks Rock The World of Ticketing.](#)"

As the company has continued to grow its client base in these related kiosk projects, its executives have identified three critical keys to success, whether the deployer is a governmental entity or a commercial enterprise. Even if a city's officials were to choose another kiosk manufacturer, we recommend adherence to these guidelines.

**The right due-diligence.** With most kiosk deployments, the hardest work is designing and building the unit, followed by installation. Most projects are straightforward when it comes to planning the logistics. Check-out kiosks are by the door of the store. Ticketing kiosks at airports are in front of baggage drop-off by the agents. Movie kiosks are outside the theater or just inside the lobby.

Even beyond placement, another key consideration, ROI, is comparatively straightforward: Will enough people use the kiosk to justify its cost?

With smart city projects, the questions are myriad and more complex.

- Which bus or light rail stations will get kiosks? All? Some now, more later? The busiest?
- What functionality should they include at launch? Will more functionality be added later?
- What are the various environmental factors the kiosks will face and what do they suggest in terms of hardware?

**Bottom line:** Partner with a kiosk company with the resources and experience to work with city leaders to create the most efficient, least costly system possible.

**The right kiosks.** Public kiosks, especially those used outdoors, are some of the most abused and stressed high-tech

devices made today. Extreme elements—from blistering heat and blinding light, to heavy rain and freezing cold—weed out all but the most robust kiosks. Ordinary use is one thing, but in the context of travel, where people are often running late and carrying back-packs or rolling bags, kiosks are particularly vulnerable to misuse. And it's certainly not uncommon for kiosks at bus or train stations to experience vandalism.

Also part of choosing the right kiosk is to make sure the manufacturer works with the right partners. Dozens of OEM suppliers are engaged to build a kiosk, and each one plays a critical role in the success of the unit. If a kiosk company is promising a world-class product, ask for a list of component providers and question whether they are world-class companies. In other words, the whole is never great than the sum of its parts.

That's why Olea partners only with suppliers who are known for their integrity, ingenuity and quality.

**Bottom line:** Take the time to ask about suppliers who contribute parts to the completed kiosk, and if those names aren't familiar, spend some time on Google.

## Conclusion

Economic and environmental issues—especially as they are increasingly interwoven—will continue to drive people back to major metropolitan areas. Leaders of those population centers will be able to better compete with other population centers by offering citizens amenities that alleviate some of the hassles related to urban living. They can use self-service kiosks to make public transportation easier to navigate. They can use them to provide information to citizens on the go. Behind the scenes, they can realize great efficiencies through robust data networks, all subsidized or wholly funded by third-party advertising.

*Let Olea Kiosks spend a few minutes on the phone to talk about our vision for smart-city technology and how our kiosks and partners can bring this new civic model to your town. Call 800-927-8063 or email [info@olea.com](mailto:info@olea.com) today.*