

PRESIDIO

City of Pittsburgh Smart Streetlights

RFI Response

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April 3, 2017

Thoryn Simpson, Senior Procurement Analyst
Office of Management and Budget
City-County Building, Room 502
Pittsburgh, PA 15219

Subject: Smart Streetlights RFI No. 2017-0001

Dear Mr. Simpson,

Presidio is pleased to present this informational package to the City of Pittsburgh in conjunction with one of our partners, Cisco Systems. Cisco and Presidio are at the forefront of developing Smart City technologies—Cisco's Smart+Connected Digital Platform is a pay-as-you-go cloud-hosted service that delivers a set of tools and guidelines for creating a Smart City framework and managing an effective solution portfolio. While we are a strong Cisco partner, Presidio is a systems integrator specializing in integrating once disparate systems and third party application providers to form a complete solution. Our team is very interested in working with Pittsburgh in a collaborative approach to develop a wide range of cutting-edge smart solutions, one of our strongest capabilities is to help The City evaluate and determine which industry applications best fit its needs for the following use cases:

- **Traffic Management:** Traffic solutions that combine IP cameras, sensors, and applications to provide visibility of live traffic conditions for traffic management authorities in real-time. The solution must provide insight into urban traffic patterns so that traffic authorities can improve daily traffic flow.
- **Lighting Control and Energy Optimization:** Your lighting solution should focus on improving management of lighting, energy, and maintenance for all light fixtures on the network, including street lights and city building lights. Accessed securely through a web browser, applications can be used to control occupancy-based dimming, daylight harvesting, copper-theft alerting, energy usage, savings reporting, and real-time maintenance status.
- **Environmental Data Collection:** A lighting solution should use a city's lighting infrastructure to create a powerful network of sensors to gather data including humidity, carbon dioxide/oxygen, UVA/UVB, particulate matter, motion and seismic activity, video, and sound in support of law enforcement, environmental improvement, transportation oversight, and disaster preparedness, etc.
- **Public Safety and Security:** The City's safety and security package should use a platform to aggregate and analyze data obtained from intelligent sensors, video cameras, and social media, enabling The City to more efficiently manage crime and respond to emergencies.
- **Parking Analytics:** Parking solutions provide citizens with real-time information about available parking. In addition, IP cameras, sensors, and smartphone apps can integrate with parking enforcement applications, pushing expiration notices to traffic officers for ticketing. It also provides visibility into parking analytics, including usage and vacancy periods, helping Pittsburgh with long-term planning.

- **Location Analytics:** City Wi-Fi enables city planners to gather data and insights via location-based services together with geo-spatial capabilities, improving long-term planning decisions. Pittsburgh can also leverage location analytics to create virtual tourist applications where visitors access city information and historical facts, improving tourist experiences. Tourists can also receive push information regarding their surroundings to help them better understand the city and its environment.

We look forward to discussing these solutions in depth with you as your RFI proceeds. Presidio has read and acknowledges Section 5 of Pittsburgh's RFI document.

Sincerely,

Shawn T. Tsetsilas, Director of Business Development
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1. EXECUTIVE OVERVIEW

The City of Pittsburgh clearly “gets it”! Building a Smart City is not about a platform and it is not about marketing. Building a Smart City is a combination of many things that ultimately deliver value to constituents through the implementation of technology. The value is derived through intelligent planning of technology, both cost cutting and revenue generating, and is not possible without partnerships in both the public and private sector. Everyday Pittsburgh makes decisions that will impact the overall Smart City strategy. Presidio’s goal is to help you navigate these waters and make the best long term decision.

At Presidio, we think, architect, implement, and support the practical reality of advanced technologies like IoT and Smart Cities every day. By taking the time to deeply understand how The City of Pittsburgh works, we architect transparent, enduring technology solutions that meet your immediate needs – and prepare you for tomorrow. As one of the largest solutions providers in the United States, we combine experience and stability with regional expertise and service, so you can rest assured we’ll be there to help you locally with the ability to pull from our global experience. Our single mission with the City of Pittsburgh is to ensure that the fundamental and underlying technology that will form the backbone of the city is available, secure, and supported cost effectively.

With our experience in the Smart City arena and in talking with hundreds of likeminded Cities, we concur that LED upgrades are the prime candidate to act as a catalyst for expansion of Smart City technologies. We find that the energy cost savings act as the strongest potential return on investment to “leverage” for building the infrastructure that will allow the city to layer on other advanced technologies in their journey to becoming a smart city. Our experience tells us that if you are going to invest in a body to climb a pole and change a bulb, then implementation of additional technologies at the same time is highly advantageous. At the same time, the decision on which lighting platform to use is quite critical, because that lighting platform must have integration points with a single analytics and management platform which also supports the thousands of other devices, sensors, vehicles, and other unknown “things” that will eventually be deployed as well.

Presidio has worked with multiple vendors to provide solutions that enable advanced technologies to become a reality for cities and provide them with new capabilities, service offerings, and revenue generation. Our specialty is in integrating these multiple technologies in order to provide a platform that a city can utilize to build their next generation service offerings to residents while lowering their operational costs. The integration of these technologies requires knowledge across multiple technology disciplines to build a complete solution out of various technologies. The benefits derived from an LED upgrade include the obvious savings in electricity, but creates an opportunity to “layer” on the following services:

- WiFi for public and business use, as well as underserved neighborhoods
- Lower cost LoRa deployments allows for cost effective deployment of lower bandwidth sensor applications
- Enhanced safety through better lighting and video analytics
- Fiber for Small Cell technologies from companies like Alcatel-Lucent and Ericsson add revenues
- Electric vehicle charging stations provide revenue and citizen services
- Kiosks for visitor and citizens improve engagement and can help public safety
- Public transportation and public works signage deployed for efficiency.

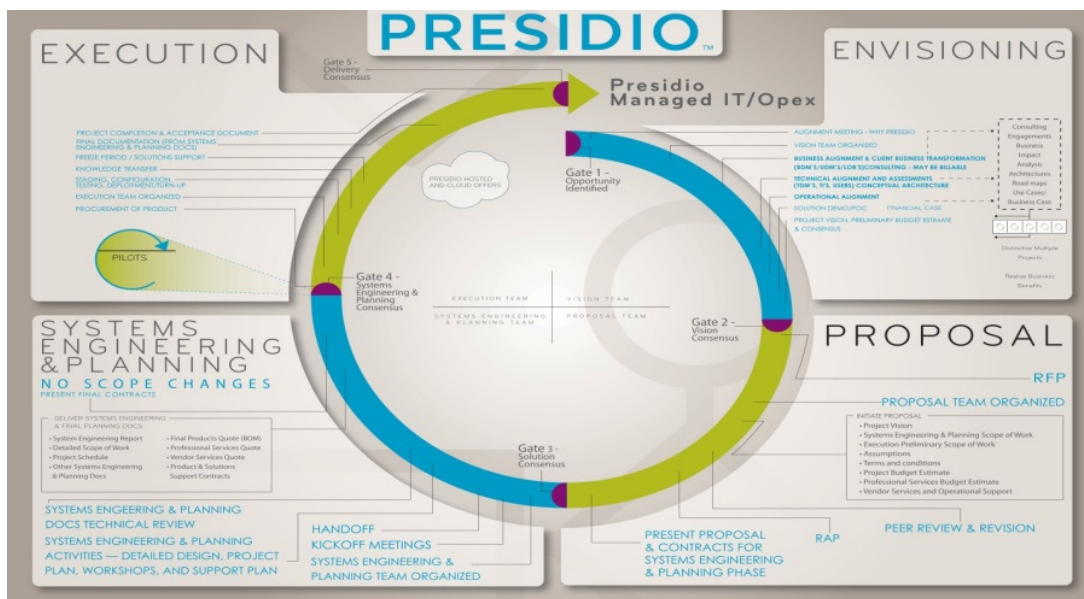
All of the above benefits and technologies can be properly and cost effectively accounted for and delivered through proper planning and collaboration. This planning and collaboration are key ingredients, missing from most cities and organizations when attempting to realize the benefit of The Internet of Things. The list above typically incorporates over a dozen or so City departments in terms of benefits in operational efficiencies. Presidio specializes in bringing these “like minded”, but traditionally silo groups together, and helps march them towards a common framework.

Presidio’s unique capability in our core competencies of building secure enterprise networks, cloud consulting, data analytics, and our IoT practice continuously help customers drive strategic initiatives to successful implementation. A Smart City is no better than the foundational elements listed above and can easily be derailed if likeminded, but silo departments continuously deploy services without keeping in line with the overall Smart City framework. Presidio looks forward to the day when it can help the City of Pittsburgh with planning, designing, and implementing the core technologies that make a Smart City a reality. How we would do this is explained in the following section.

2. STRATEGIC ENGAGEMENT FRAMEWORK

Presidio's Strategic Engagement Framework (SEF) is used to ensure better city results with minimal risk. To accomplish a Smart City, initiatives are broken down into activities, tasks and deliverables in a series of phases that start with aligning needs of The City of Pittsburgh with the capabilities of the technology and evaluating the impact to the organization (Envisioning). Once Vision consensus is achieved the solution is refined and proposed (Proposal). Capabilities of solutions are then further mapped into the technical and user environments and a detailed design and project plan is developed (Systems Engineering and Planning). With a clear understanding of city impact, risks and rewards, and with a comprehensive design and plan in place the solution is implemented (Execution). Once the solution is in place it is important to ensure a qualified, efficient, and timely support structure is in place to maintain optimal operating conditions and that the solution continues to add value over time (Managed IT/Opex). These phases combine to form the SEF. By partnering with The City of Pittsburgh and focusing on envisioning and planning, Presidio is able to confidently execute a Pittsburgh focused city technology solution and significantly reduce financial/organizational risk.

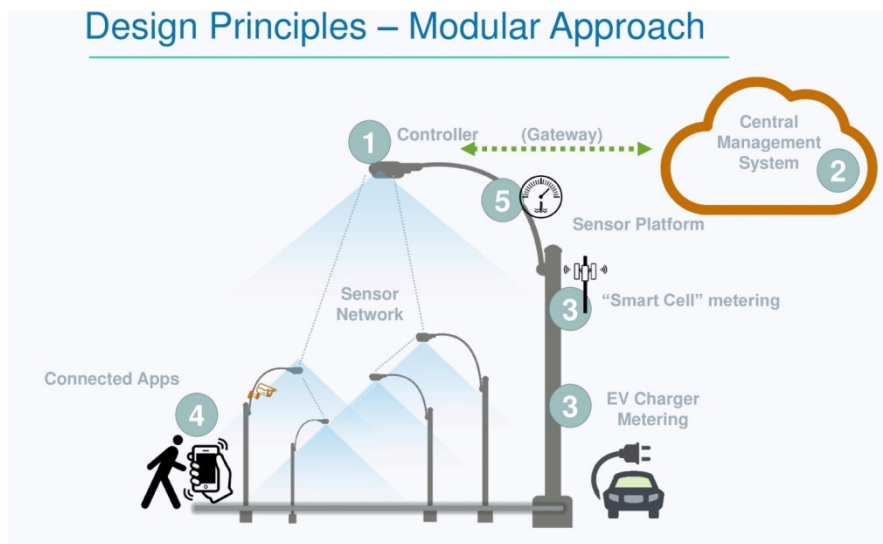
The following is a high level diagram of Presidio's Strategic Engagement Framework:



3. SOLUTION OVERVIEW

As a national systems integrator Presidio has become a 3 Billion dollar supplier and integrator of Technology Solutions and we play a critical role in Cisco's IoT and Smart City strategy. As such, Presidio invests considerable dollars in testing and creating reference architectures that align with Cisco's product line and services and also incorporates other solutions. Because smart lighting and control systems are only one element of the Smart City architecture this allows Presidio to provide our customers with proven solutions to build entire Smart City platforms rather than just a single product.

Presidio fully supports Cisco's smart lighting strategy and the use of the Cimcon lighting and control system. Not only does the Cimcon platform provide all the necessary functionality of a smart lighting system, it also fits seamlessly into Cisco's City Digital Platform (CDP) and core networking, wireless, and security technologies. It is important for The City of Pittsburgh to review the importance of these non-lighting elements in regards to the success of the overall lighting system itself. As one example, the same core network infrastructure that supports the smart lighting on a city pole is the same infrastructure that might support a Kiosk, or traffic signal, or any other IoT element that may exist on that particular pole. The below figure depicts other technologies like cellular femto cell technology or metering for an electric vehicle charging.



Traffic Management, Air Quality, and Gun Shot Protection

Presidio agrees that a fundamental function of a Smart City is to deploy sensors such as the ones listed above. We classify all of these functions under a Public Safety umbrella. Also under this Public Safety umbrella is a video surveillance system that has hooks and integration to local, state, and potentially federal law enforcement agencies. Smart City deployments are an ideal time to integrate these typically disparate and silo systems onto a common architecture and platform.

Presidio's value to the City of Pittsburgh is to take all of the above stated applications and help guide the city in making the right decision for each of the elements. Presidio does not manufacture or make any of the actual products listed above. Our expertise lies in aligning a city's foundational requirement in each element category and aligning them into a complete and integrated Public Safety system. Presidio uses the SEF framework to align technical, operational, and financial requirements with investments that have already been made as well as aligning with future investments of the City. In essence, Presidio's goal will be to utilize as much of the existing and paid for technology that the city has and integrate it into the Smart City platform.

Transportation and Vehicle

One critical use case we see common across municipalities is that of vehicles as an asset as well as a use case. Presidio sees the use of vehicles, specifically first responder, school bus, mass transportation, and public works as key components to delivering a ubiquitous Smart City environment. The use of on board WiFi, location services, and vehicle telematics can greatly improve efficiencies, situational awareness, and student/citizen engagement. By enabling these different types of vehicles with a common platform that can also deliver differentiated services to each vehicle can be powerful. Examples of what Presidio has done in the EMS and law enforcement arena are below and there is also a video at the below URL that describes our Connected School Bus solution.

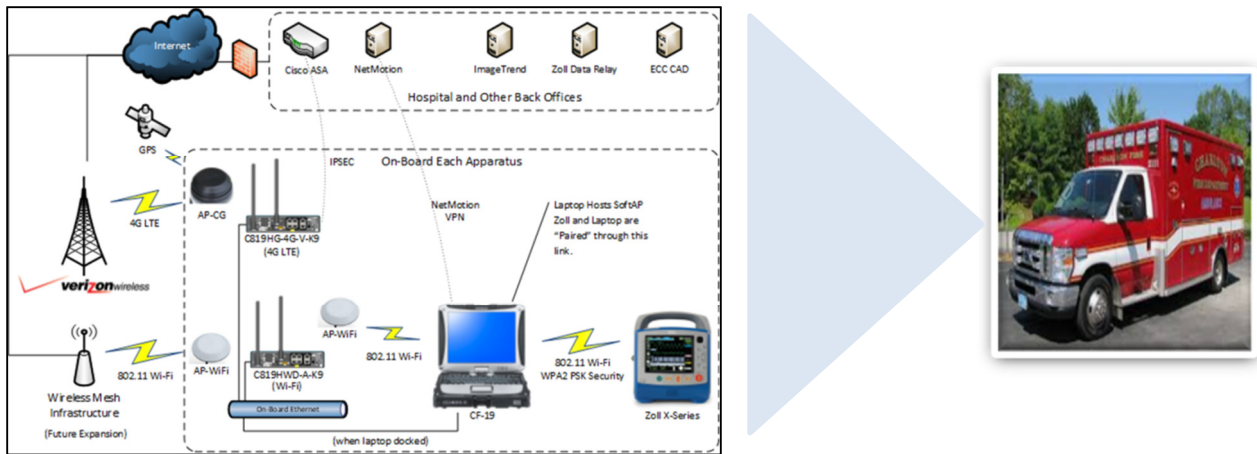
Hunstville School District Connected Bus

Five years ago, Texas' Huntsville Independent School District began the process of planning a 1:1/BYOT (Bring Your Own Technology) initiative. Community businesses jumped on board, offering free Wi-Fi access to students, but the district wanted to do even more to extend the connectivity beyond the school walls. "We began talking about Wi-Fi on buses," says Tracie Simental, executive director of technology. "We knew it would extend the learning day and recapture the time students need to finish homework and complete their assignments." It would also help students stay connected while in route to after school sports events. Intel partnered with the school district, DELL (Chromebooks) and Cisco (routers) for hardware, Google for learning software and Presidio for integration. They wanted check on and check off bus, Wi-Fi and overall connectivity for their students.

Please see this video for a well-articulated description.

<http://info.presidio.com/connectedtransportation-0>

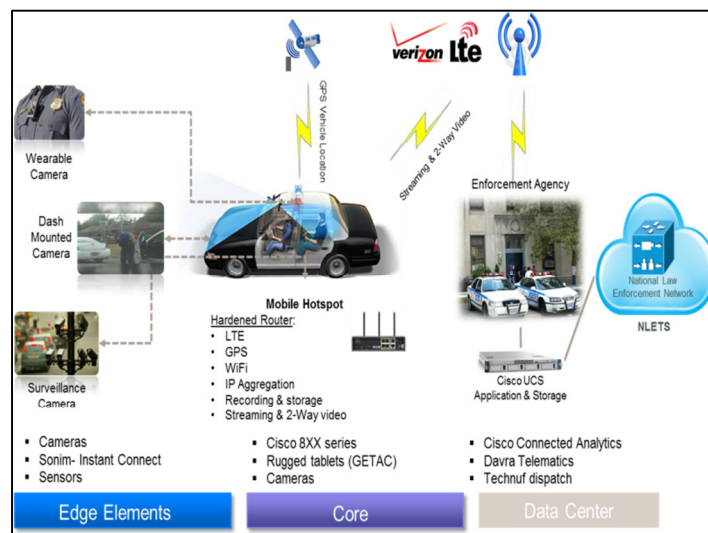
Nashville Tennessee – Ambulance Internal Network



Law Enforcement

Please see this video for a well-articulated description.

<http://www.recode.net/sponsored/13942388/the-new-jersey-police-are-harnessing-technology-to-protect-the-people>



4. SUMMARY

Through our Strategic Engagement Framework Presidio is well positioned to help the City of Pittsburgh chart a course for Smart City environment by utilizing existing investments and investments and helping The City make current and future decisions that enable an overall Smart City architecture. As stated, there are certainly decisions being made today with regards to information and operational technology that certainly have an impact on Pittsburgh's Smart City and Smart Lighting initiatives. We ask that you allow us to help you on this journey.

Presidio understands that no one company can provide everything the City needs. We are confident that our ability to partner with financing organizations, construction firms, power companies, software providers, product manufacturers, and telecommunications providers positions us well to empower the City of Pittsburgh to realize its vision.