

Smart Parking
for
municipalities,
airports, and
other high traffic
locations



StreetLine Networks and Dust Networks Reducing Traffic and Pollution, Making Happier Citizens and More Cost Efficient Cities.

SUMMARY

Dust Networks wireless mesh network solution enables Streetline Networks to reliably gather the real-time status (occupied, empty or expired) of municipal metered parking spots, and use that data to reduce traffic congestion. Even in the harsh and unpredictable environment of a city street, Dust Networks ultra low power sensor nodes provide years of maintenance-free operation.

CHALLENGE

Streetline needed a wireless networking solution robust enough to function in harsh and dynamic street conditions, one that could be large and dense, and that could run for years without changing the batteries.

SOLUTION

Dust Networks SmartMesh products, with ultra low power 802.15.4 nodes and advanced Network Management, create intelligent, auto-forming and self-healing mesh networks able to run for years on two AA batteries. SmartMesh provides the robust and reliable wireless mesh network Streetline needs.

THE CHALLENGE

It's estimated that 30 percent of urban traffic is caused by motorists looking for parking. In a study that measured traffic in one small district of Los Angeles, researchers found that drivers drove more than 950,000 miles, produced 730 tons of carbon dioxide and used 47,000 gallons of gas searching for parking.

The frustrations of wasted time, traffic congestion, road rage and pollution are all aggravated by the difficulty and randomness of finding an empty parking spot. Municipal parking enforcement, too, is an inefficient, labor-draining activity where finding offenders is like looking for the proverbial needle in the haystack.

The solution is, of course, to collect data from individual parking spaces in real time, but this is not a simple task. Wiring each parking space for power and communications is out of the question, and so is any requirement for frequent battery changes. Therefore, the solution needs to be wireless and needs to be able to run on batteries for years at a time. Also, the city street is not kind to wireless radio transmissions. Automobiles, vans, trucks and buses present continuous and dynamic barriers which deflect, reflect and attenuate radio signals. The solution, then, must be highly resilient and reliable. Lastly, the solution must be easy to deploy, easy to scale up, and simple to configure, not requiring specialized technicians.

THE SOLUTION

Streetline Networks selected Dust Networks SmartMesh wireless mesh network for its long battery life, intelligent Network Manager and robust scalability. Their communications system is comprised of Dust Networks' wireless nodes and network managers.

"The Dust Networks SmartMesh network provides the resiliency and reliability necessary for the uniquely demanding urban environment of city streets," said Mark Noworolski, Chief Technology Officer at Streetline Networks. "The SmartMesh products have proven to be a very compelling alternative to building your own hardware and software stack, allowing us to concentrate on building innovative solutions for Smart Cities,"



Surface Mounted Sensor

The SmartMesh product line includes IEEE 802.15.4 motes-on-chip, mote modules and network managers. Field-proven and robust even in the harshest environments, the SmartMesh product line is a full mesh networking solution. It utilizes a time synchronized mesh protocol to deliver networking resilience, reliability, and scalability, while providing advanced network management and comprehensive security features. Dust Networks ultra low power technology allows network nodes to run for years on two AA batteries.

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The SmartMesh intelligent Network Manager provides advanced, built-in technology to create an auto-forming, self-healing, multi-hop, mesh network that is scalable to large, dense, deep networks. It further maximizes battery efficiency and time-to-first-maintenance through load balancing and optimization. The Network Manager also ensures that nodes are simple to deploy and do not require specialized technicians. All network configuration and management can be handled remotely using the Network Manager.



Embedded Sensor

Streetline's Smart Parking Solution integrated Dust Networks SmartMesh products into their surface-mounted and embedded sensors which contain an array of sensing components and logic to manage the collection of data at the individual parking space. SmartMesh's proven, advanced RF resiliency allows Streetline to reliably transmit street-level data in real time to their web-based suite of parking management applications. These applications can show motorists where to find vacant parking spots, text them when their parking-meter time is running out, and even direct parking enforcement directly to occupied expired meters.

THE RESULTS

A growing number of cities, including New York City, Los Angeles, Culver City (CA), Fort Worth, Asheville (NC), the Washington (D.C.) Metropolitan Transit Authority and the New Brunswick Parking Authority have installed Streetline Networks Systems.

"As a major transit hub for New Jersey, New York and Pennsylvania cities, we are constantly looking for ways to make life easier for visitors, commuters and residents while lessening our carbon footprint," said Mitchell Karon, Executive Director of NBPA. "With Streetline's smart parking platform, we achieve both of these goals and more."

Together, Dust Networks and Streetline Networks are reducing traffic congestion, making cities cleaner and citizens happier, and making valuable municipal resources more efficient.

WHY WORK WITH DUST NETWORKS?

Dust Networks, a pioneer in the field of wireless sensor networking, is defining the way to wirelessly connect smart devices. Using standards-based network technology, Dust Networks provides reliable, resilient and scalable network solutions with advanced network management and comprehensive security features.

ABOUT STREETLINE NETWORKS

Streetline's mission is to make smart cities a reality through the use of sensor-enabled mobile and web applications. As the leading global provider of smart parking solutions for cities, airports, universities, private garages and consumers, Streetline's pioneering technology connects citizens with critical information to improve the way they live and work, while making cities more efficient and lessening their environmental impact.

Streetline is a privately held company headquartered in San Francisco, Calif. with smart-parking deployments in California, Maryland, New York, Texas, Utah, and Washington D.C. The company was recently named one of Fast Company's 10 Most Innovative Companies in Transportation, as well as IBM Global Entrepreneur of the Year.

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