There are over 4 billion outdoor lights around the globe. By taking advantage of the worldwide, outdoor lighting upgrade to LEDs, we are building out a new, planet-sized sensor network using that infrastructure to deliver both energy-efficient lighting and a real-time, global database of information that allows customers to manage and understand their physical environment to enable greater productivity, efficiency, and security.”

- Hugh Martin, Chairman and CEO

Light Sensory Network

Capitalize on the LED Transition

- Transform lighting into a sensor network
- Pervasive, simple, flexible
- One network, one platform, hundreds of Internet of Things (IoT) services
- Cloud platform for anytime, anywhere applications
- Operates with standard Wi-Fi
Sensity capitalizes on conversions to LED lighting—a process that will affect 4 billion lights worldwide over the next few years—to create a high-speed, sensor-based, multiservice, open networking platform known as a Light Sensory Network (LSN). LSNs help lighting owners improve lighting control and energy efficiency, as well as business processes that go well beyond lighting.

By embedding networking technology and sensors within LED luminaires themselves, Sensity uses energy-efficient LED lighting as the foundation for its turnkey NetSense platform, the first Light Sensory Network implementation. By working closely with developers of software applications and services that run on the NetSense platform, Sensity enables facility and municipal lighting owners to link energy efficiency and cost savings to the improvement of business goals as diverse as public safety, parking control, asset management, and retail analytics.

Sensity is the first company that has assembled all the relevant technology expertise, process integration know-how, and strong partnerships required to make the Light Sensory Network a reality.
“Our strategic relationship with Sensity marks a defining moment in our journey of innovation in the Internet of Things and the Internet of Everything. We share a common vision with Sensity, recognizing that smart lighting is just the tip of the iceberg. This new platform will create enormous potential for cities as they continue to roll out a platform that can deliver multiple applications and services, all using a common set of sensors, analytics and network for greater productivity, efficiency, and public safety.”

- Wim Elfrink, EVP Industry Solutions and Chief Globalization Officer, Cisco

Municipalities
Save Energy, Increase Revenues

- Improve energy savings through adaptive lighting control
- Lower infrastructure management costs
- Improved public safety through video analytics
- Immediate access to data, improving decision making and analysis
- Uplift in city revenues from improved compliance efficiency
- Support public Wi-Fi as part of lighting upgrade
NetSense is our next-generation Light Sensory Network platform that delivers value beyond adaptive controls across lighting infrastructure. The NetSense platform transforms LED light fixtures into sensor-equipped, smart devices capable of capturing and transmitting data near real-time, providing unprecedented actionable insight and enabling a broad array of applications and services.

**Greater integration flexibility**
NetSense Nodes are designed for easy installation with a variety of fixtures, and support NEMA C136.41 standards.

**Smaller, sleeker form-factor**
Streamlined mechanical design extends NetSense capabilities into a wide range of deployments.

**On-board (native) video support**
Dual 720p cameras, processing, and storage enable real-time video analytics on raw high-definition (HD) video streams.

The following pages explain the key components of the NetSense platform:
“Sensity’s LSN vision for LED lighting as the platform for sophisticated networking is really changing the landscape for new Internet of Things technologies to be implemented in the field. Customers such as airports, municipalities and large retailers are looking for stronger public safety and security solutions, requiring automated, real-time instant alerts to all the necessary people within their organization or to law enforcement—which means intelligent video and sensor capabilities. We believe that many of our customers will enthusiastically embrace Sensity’s new NetSense platform”

- Bill Graham, CEO of FSG (Facility Solutions Group)
NetSense is our next-generation Light Sensory Network platform that delivers value beyond adaptive controls across lighting infrastructure. The NetSense platform transforms LED light fixtures into sensor-equipped, smart devices capable of capturing and transmitting data near real-time, providing unprecedented actionable insight and enabling a broad array of applications and services.

**Key Attributes of NetSense**

**High-speed & real-time**
Data must be communicated with low latency in real-time. For many NetSense applications, including the sensing and alerting of suspicious behavior, or the detection of gunshots, the application is only possible if data is analyzed on the order of milliseconds.

**Distributed intelligence**
NetSense nodes have embedded advanced compute capacity that is powerful enough to perform real-time video analytics on raw HD video streams. This capability allows NetSense to pick out critical information from noisy data, transforming cameras from recording devices into high-value sensors.

**Data security and privacy**
As a platform designed to support rich datasets, NetSense has been architected from the ground up to safeguard data and enable privacy. This means that there are layers of security throughout the system, from each node to the cloud, and the collection of data is governed by the narrow purpose of specific applications.

**Cloud-based platform**
As a cloud-based platform, NetSense can evolve to support new applications and requirements over time. Applications, feature updates, and firmware upgrades are delivered seamlessly, enabling new capabilities, enhanced functionality, and increased security.

**High data throughput rate**
Some of the most data-rich sensors, including HD video sensors, require high bandwidth networking technology. Sensity designed and optimized its hardware and network architecture—from the network elements to the back-end software—to accommodate this class of data. By leveraging 802.11a/n Wi-Fi for local area networking and cellular or fiber for data backhaul, NetSense can accommodate the most data intensive of sensors.

**Open API and ecosystem of applications**
The rich ecosystem of NetSense applications—from smart parking to location analytics—is a direct result of Sensity’s cloud-based architecture and open API, which allows developers and partners access to real-time data delivered by the nodes, while maintaining strict security and ensuring reliability and availability.

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**NetSense provides an extensible platform for applications**

<table>
<thead>
<tr>
<th>Future Applications on Platform</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adaptive Lighting Control</td>
</tr>
<tr>
<td>Occupancy dimming, daylight harvesting, advanced scheduling</td>
</tr>
<tr>
<td>Real-Time Monitoring and Alerting</td>
</tr>
<tr>
<td>Copper theft alerting, fault detection, maintenance reports</td>
</tr>
<tr>
<td>Safety &amp; Security Fabric</td>
</tr>
<tr>
<td>Video-based security, alerting for suspicious activity</td>
</tr>
<tr>
<td>Environmental and Traffic Monitoring</td>
</tr>
<tr>
<td>Vehicle detection and counting, environmental sensing data</td>
</tr>
</tbody>
</table>

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**NetSense**

- High-speed & real-time
- Distributed intelligence
- High data throughput
- Data security
- Cloud-based platform
- Open API (ecosystems of apps)
NetSense Nodes

Core Node
The Core Node provides full lighting control capabilities and also collects basic sensor information (ambient light, motion detection, temperature, and power monitoring). Core Nodes are designed to be low-cost, lightweight, and adaptable to be deployed alongside any third-party lighting fixture via a NEMA socket or fully integrated into luminaires.

<table>
<thead>
<tr>
<th>Core Node</th>
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</thead>
<tbody>
<tr>
<td>AC Input</td>
<td>120-277V or 480V</td>
</tr>
<tr>
<td>Max AC Current (Total)</td>
<td>10A</td>
</tr>
<tr>
<td>AC Output</td>
<td>Always On</td>
</tr>
<tr>
<td>Dimming Control Output</td>
<td>0-10V</td>
</tr>
<tr>
<td>Max Power Consumption</td>
<td>2.5W</td>
</tr>
</tbody>
</table>

Video Node
The high-performance node in the network, the Video Node is designed to support higher-bandwidth data and contains a powerful computational engine for analyzing data-rich applications (security, smart parking, etc.) across the NetSense platform. The capabilities of Video Node include, for example, the ability to fully support the local high-intensity analysis of HD video, and up to 256GB storage capabilities.

<table>
<thead>
<tr>
<th>Video Node</th>
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</thead>
<tbody>
<tr>
<td>AC Input</td>
<td>120-277V or 480V</td>
</tr>
<tr>
<td>Video Sensor Support</td>
<td>Dual 720p Video Sensor Support</td>
</tr>
<tr>
<td>Video Storage</td>
<td>Up to 256GB</td>
</tr>
<tr>
<td>Auxiliary Power</td>
<td>Power over Ethernet (PoE)</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>26W</td>
</tr>
</tbody>
</table>
NetSense Live

NetSense Live is Sensity’s cloud-enabled Light Sensory Network (LSN) management solution that ensures all services are always connected, available, and secure. NetSense Live is delivered as cloud-based software backed by real-time, 24x7 live support and management service from the NetSense Live NOC: luminaire and sensor operation (including video), network security, and data integrity are never left to chance.

Real-time, and all-the-time
The NetSense Live Network Operations Center (NOC) actively manages your LSN on a continuous (24x7) basis, including firmware upgrades, failure alerts, configuration changes, performance reporting, security alerts, and incident response.

Protection against cybersecurity threats
The entire end-to-end solution is actively managed and upgraded, protecting against evolving cybersecurity threats with automatic security updates as soon as they’re available.

Theft and outage detection
NetSense Live NOC provides real-time detection and alerting via email or SMS for circuit outages and potential wire thefts.

Evolving features and capabilities
The latest and greatest in new functionality is rolled out automatically to every device from the cloud – no software or hardware to maintain, patch, or configure.

NetSense Live NOC
Circuit monitoring
Firmware upgrades
Intrusion prevention
Real-time alerting
Network resiliency
Feature updates
Node monitoring
Automatic troubleshooting

Features, upgrades, and support – managed so you don’t have to.

Web-based anytime, anywhere, management.
“As a result of partnering with Sensity, we are opening up an entirely new area in lighting applications and services for our company that goes far beyond lighting controls by offering an array of third-party applications on our SmartSite LSN products that will include video-based security and public safety, parking management, predictive maintenance and more. These new offerings will provide us with a significant competitive advantage.”

- Chuck Campagna, President and CEO of Amerlux

**Airports**

**Save Energy, Improve Public Safety**

- Proven energy savings of 70%+ with natural lighting
- Improved parking efficiency with traveler location and directions
- Provide retail tenants with analytics services
- Offer traveler Wi-Fi services as part of lighting upgrade
Sample Partner Applications

**Public Safety & Security**
NetSense enables security solutions in environments such as parking lots and garages, college and corporate campuses, and city streets where there is a need for enhanced security, asset protection and perimeter detection. NetSense provides both transport capabilities to stream video and edge-based intelligence, sending back analytics and alerts to a central private cloud database. These edge-based and real-time analytics include:

- Cost-effective extension of the security perimeter
- Configurable events and alarming from video analytics
- Broad analytic capabilities, including license plate recognition

**Smart Parking**
NetSense gathers real-time parking availability data and makes this information available to parking application providers through an open application programming interface (API). This data enables real-time way-finding, dynamic pricing, and parking management, benefiting both drivers, and the owners of those parking assets. By leveraging this common infrastructure, cities can reduce both the hardware cost and service fees associated with a traditional smart parking deployment, while malls and retailers can help to close the gap between brick-and-mortar and online shopping experiences. Benefits include:

- Lower vehicle miles traveled and carbon emissions
- Improve the parking experience
- Increase parking revenue generation opportunities

**Location Analytics**
NetSense enables location analytics, generating essential insights for operational and marketing metrics. These solutions are capable of generating traffic counts by area, time of day, repeat visitors, and visit duration, providing insights into organizations’ population of patrons, whether in airports, malls, or central business districts. The data collected by the NetSense platform on behalf of our location analytics partners generate:

- Deeper understanding of populations served
- Detailed reports comparing traffic over time
- Overall pedestrian traffic counts, broken down by visit frequency and duration
Sensity’s Vision
There are over 4 billion outdoor lights around the globe. By taking advantage of the worldwide, outdoor lighting upgrade to LEDs, we are building out a new, planet-sized sensor network using that infrastructure to deliver both energy-efficient lighting and a real-time, global database of information that allows customers to manage and understand their physical environment to enable greater productivity, efficiency, and security.

Sensity Customers
Sensity Systems customers represent a diverse cross-section of markets, public and private, large and small. Global customers include cities and municipalities, retail mall owners, office property managers, professional sporting stadiums, airport and transportation authorities, and universities.

About Sensity
Sensity Systems uses energy-efficient LED lighting as the foundation for a high-speed, sensor-based Light Sensory Network (LSN). The company enables light owners to capitalize on the LED conversion process by embedding networking technology within both retrofit and new LED luminaires. With Sensity’s open, privacy-by-design, multiservice NetSense platform, lighting owners are able to reduce energy costs and implement a variety of applications and services, including public safety, environmental and weather monitoring, parking management and location analytics.

For more information on NetSense, please contact info@sensity.com or call direct at 408.841.4200.