

Company Name: Ouster

Project Title: Pioneering the Future of Safer Streets: Ouster BlueCity's Vision Zero Transformation

Description:

Ouster BlueCity is transforming how cities modernize traffic management and prioritize safety. By combining high-resolution 3D digital lidar with AI-powered perception software, Ouster BlueCity delivers real-time, multimodal traffic insights that drive proactive safety interventions and enable dynamic traffic signal actuation. Proven to reduce near-miss incidents and optimize traffic flow, the solution is empowering cities across the world to advance toward Vision Zero. With hundreds of deployments worldwide and the largest lidar-powered smart traffic network in the U.S, Ouster BlueCity helps cities build safer, more efficient, and more connected roadways through intelligent, scalable, and future-ready traffic management and road safety solutions.

Submission:

Across the globe, transportation agencies, municipalities, traffic engineers, and research universities are responding to road safety and traffic volume challenges. They are united by a critical goal: the pursuit of Vision Zero – eliminating all traffic fatalities and severe injuries, and increasing safe mobility for all. Achieving this ambitious target requires a multi-faceted approach, leveraging data-driven insights and innovative technologies to understand and mitigate risks for all road users.

Ouster is setting the standard for how cities modernize traffic management and prioritize safety. The Ouster BlueCity solution is an industry game-changer that transcends traditional limitations by replacing outdated inductive loops and unreliable sensors with a holistic, AI-enabled lidar system. Ouster BlueCity was the first traffic management and road safety solution to use AI-powered lidar perception, providing unprecedented insights to create a pathway to safer roads and eased traffic flow. Its unique ability to enable dynamic traffic actuation, significantly improve traffic flow, and provide vital safety analytics for Vision Zero initiatives – including proven reductions in near-misses – is helping to advance the industry forward.

Ouster BlueCity delivers unparalleled real-time, 3D multimodal data on all road users in all weather and light conditions all while protecting privacy of communities. Further strengthened by Vehicle-to-Everything (V2X) communication integration and a NEMA TS2 certification, Ouster BlueCity is fundamentally redesigning safer, more efficient, and intelligent urban mobility.

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The system is a turnkey solution that delivers more intelligent signal actuation at intersections while generating an analytics data stream that gives traffic operators and city planners high quality insights about their intersections and public corridors, and provides real-time, on-demand traffic data to maximize efficiency and improve safety for smarter cities.

Ouster BlueCity combines Ouster's 3D digital lidars with proprietary AI perception software and data analytics, enabling the creation of a real-time 3D digital traffic twin of an intersection or road to reliably detect and classify multimodal road users - vehicles, pedestrians and cyclists - for a modernized traffic management solution. The same one or two lidar system deployment at an intersection or roadway also seamlessly integrates with V2X communication systems, enabling real-time, data exchange for safety alerts between infrastructure and vehicles.

By integrating Ouster BlueCity, cities and transportation agencies can implement adaptive traffic lights that respond dynamically to changes in traffic patterns.. The ability to easily design and adjust virtual loops and signals enhances the efficiency of transportation systems, ensuring that roads remain safer and less congested.

Ouster BlueCity ensures reliable, advanced multimodal object classification and detection for complex safety scenarios such as near-miss detection, red-light running, wrong-way driving, events occurring outside crosswalks as well as other metrics such as vehicle speed, trajectory and count. The system automates data collection in the cloud without the need for time consuming and often inaccurate manual data collection efforts. Data is accessible 24/7 in a cloud-based analytics dashboard for convenient analysis. This is helping agencies and municipalities save time and costs, and ensures safety interventions are more proactive and informed for future safety measures and planning optimizations.

The solution stretches beyond urban city interactions and roads to highways, toll booths and overheight applications. This includes the monitoring and alerting of stopped vehicles and wrong-way drivers on highway off ramps.

The system's ability to detect and monitor vulnerable road users is also helping cities to monitor large crowds following events, thus ensuring precise road closure timing in order to optimize roads for safety, emergency vehicles and traffic flow.

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Ouster BlueCity has been designed to be very accessible with a non-invasive install that does not disrupt traffic, and requires no road closures in the vast majority of deployments as lidars are installed on the curb-side pole. Customers can be up and running quickly with this low-maintenance solution.

Largest lidar-powered smart traffic network in the U.S.

Ouster BlueCity is seeing tremendous adoption and currently has the largest industry deployment of lidar detection technology for traffic and pedestrian safety in the United States.

More than 120 intersections in downtown Chattanooga, Tennessee are being equipped with Ouster BlueCity, enabling real-time traffic insights and proactive safety interventions as part of the city's efforts to modernize its transportation infrastructure.

The city first piloted at 12 intersections and as a result an 100% reduction in near-miss incidents on a high-risk city block.

"Chattanooga is leading the country in adopting smart city technology to improve our roadways, and with it, the safety and quality of life of our citizens," said Chattanooga Mayor Tim Kelly. "Using American lidar and advanced perception software from Ouster, we are building the largest lidar-powered smart traffic network in the United States. This technology will enable optimized traffic signal management on roads and intersections to improve traffic flow and provide data we can use to improve pedestrian safety."

To expand the city's lidar connected traffic infrastructure, Chattanooga is working with Southern Lighting & Traffic Systems and the Center for Urban Informatics & Progress (CUIP), part of the University of Tennessee Chattanooga Research Institute (UTCRI),

Scaling Smarter, Safer Intersections Worldwide

Ouster's BlueCity solution is already deployed at hundreds of intersections around the world, with expansion expected to reach over 400 sites this year. This includes a recent contract award by the state of Utah with Ouster's partner Econolite. As part of the traffic signal detection project, a UDOT committee assessed six proposed lidar detection systems and determined five met the minimum requirements. Based on the technical evaluation, Econolite received the highest overall vendor score.

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with its proposed Ouster BlueCity integrated solution.

Other notable deployments with other transportation agencies include NDOT, GDOT and NJDOT. As more municipalities take steps to improve safety and modernize their traffic infrastructure, Ouster BlueCity is providing the real-time traffic data needed to maximize efficiency and drive smarter, safer city planning and as they work towards Vision Zero.

Ouster BlueCity has achieved system-level [NEMA TS2](#) certification as a detection system for traffic actuation in 2024, making it the first certified lidar traffic solution with Buy America(n) lidars. Ouster lidars are NDAA compliant, IP68/69K certified and the first high resolution 3D lidar approved under the Blue UAS framework.

The future of traffic actuation will be defined by intelligent systems that can process vast amounts of real-time data to adjust systems dynamically to optimize traffic flow. By leveraging the power of lidar technology, Ouster BlueCity is at the forefront of this evolution, with cities rapidly adopting this technology for safer roads and intersections.

By The Numbers

There has never been a greater need for advanced traffic safety solutions. As urban populations grow and road usage intensifies, intersection-related safety incidents are rising sharply.

Ouster's BlueCity today is providing cities with the real-time, AI-powered data and insights necessary that are helping to address these challenges head-on, improve intersection safety, and save lives.

- Each year, roughly [half of all traffic injuries in the United States](#) are attributed to intersections. According to the Federal Highway Administration, there were a total of [42,514 traffic fatalities recorded in 2022 in the U.S., of which 12,036 involved an unsignalized intersection](#). The fatality rate drops to 4,204 fatalities at signalized intersections, with many incidents driven by [red light runners](#) and other dangerous behavior such as [wrong-way drivers](#). These statistics highlight the ongoing challenges in road safety improvement and the urgent need for better traffic management strategies.
- According to preliminary data released by the Governors Highway Safety Association (GHSA), there were [7,318 projected pedestrian fatalities in the United States in 2023, down 5.4% from the previous year but 14.1% higher than 2019](#).

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- The GHSA also reported that [1,149 cyclists were killed on U.S. roadways in 2023, a 4% increase from 2022](#). This trend contributes to real and perceived safety threats, as nearly [25% of U.S. adults reported that traffic is a barrier to safe walking](#). Of these, 79% selected vehicle speed as a contributing traffic characteristic.

Additional Resources:

- [Ouster BlueCity to Power the Largest Lidar-Enabled Smart Traffic Solution in the United States](#) - Press Release - January 14, 2025
[From inductive loops to lidar: How lidar-powered traffic systems are redesigning urban traffic management](#) - Blog Post - February 2025
- [From static to smart: Lidar's role in smart transportation infrastructure for a safer, connected future with ADAS and V2X](#) - Blog Post - April 2025
- [Enhancing pedestrian road safety: Outside of crosswalks](#) - Blog Post - October 2024
- [Tackle wrong-way driving head on with 3D digital lidar technology](#) - Blog Post - November 2024
- [How to accurately detect red-light runners with digital lidar](#) - Blog post - October 2024
- [Beyond the close call: Solving near-miss detection with 3D digital lidar](#) - Blog post - October 2024

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