

Juganu's Data Privacy & Security Overview

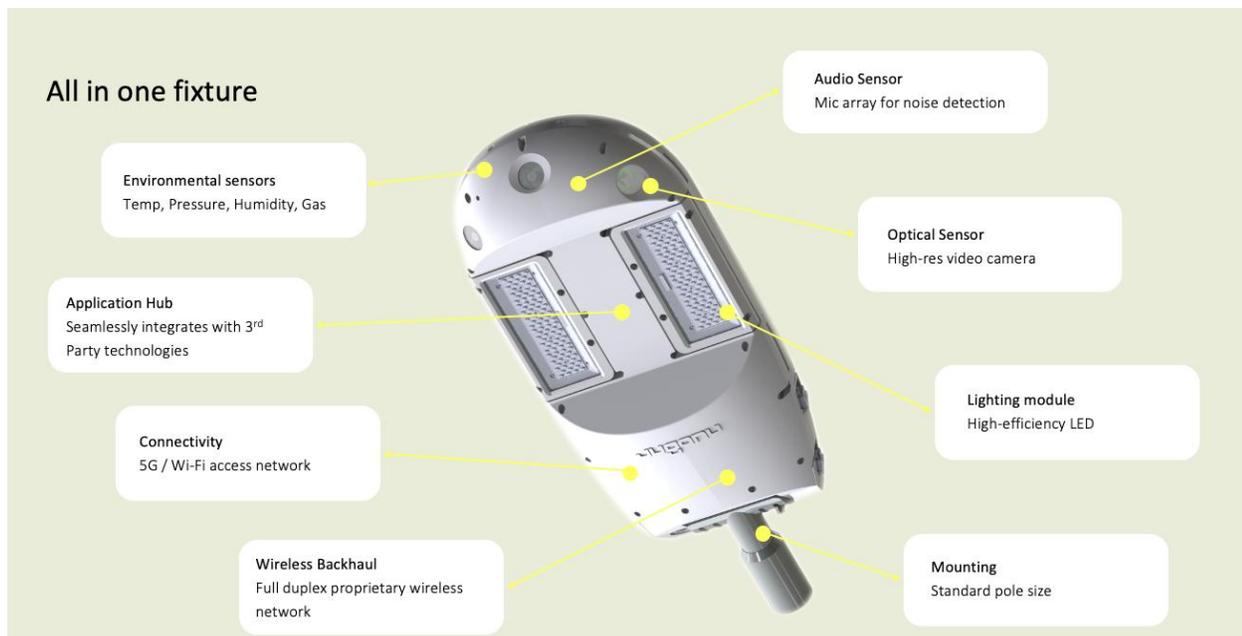
Introduction

This document provides an overview of the data privacy principles that Juganu upholds to protect the privacy of individuals. It is designed to assist and support Juganu's partners, system integrators (SIs), and end-customers in their efforts to comply with these principles as required.

How it works

Juganu's solutions are integrated into uniquely designed light fixtures that blend seamlessly into various environments. Each fixture is equipped with essential components that enable our innovative solutions:

- Audio sensors
- Optical sensors
- Lighting modules
- Environmental sensors
- Application hub
- Connectivity
- Wireless backhaul



These fixtures function as edge computing devices, processing data locally. This minimizes privacy risks by transforming raw data collected from the physical space into metadata, thus addressing privacy concerns directly at the source.

Juganu's Optical sensor solution

Juganu's optical sensor solution offers versatile modes tailored to varying privacy and functionality needs, ensuring data security while providing valuable insights. Here's a detailed overview of each mode:

Object Detection Capabilities:

- Vehicles
- People
- Products
- Heads (for blur)

Reverse Engineering:

It is not Possible to reverse engineer the data into the CCTV captions

Mode 1: Anonymized Insights Mode

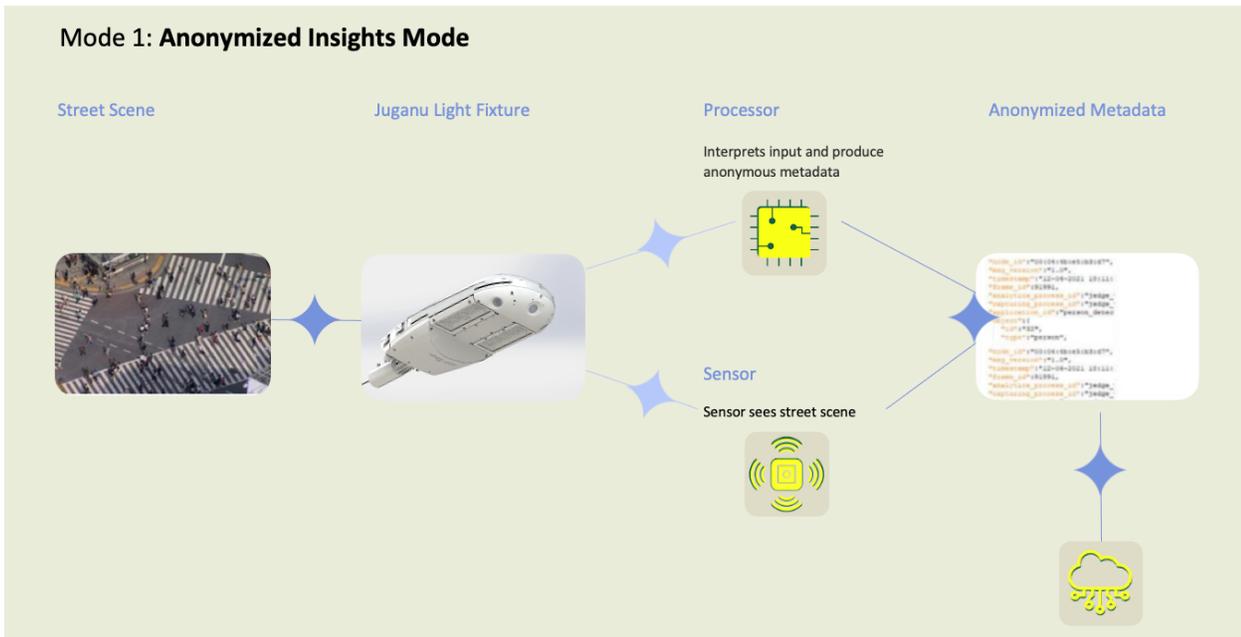
Description: Delivers anonymized data without images and no Personally Identifiable Information (PII), ideal for general analytics without compromising privacy.

Features:

- No images
- No PII

Use Cases:

- General analytics.
- Traffic counting.
- Occupancy monitoring.



Mode 2: Geo-Analysis Mode

Description: Displays data on a floor plan or map view with precise location tracking but without PII. Perfect for spatial analysis and optimization.

Features:

- Floor plan integration
- Map view location tracking
- No PII

Use Cases:

- Space utilization.
- Flow analysis in spaces.
- City planning.

Mode 3: Secure Stream Mode

Description: Secure Stream Mode delivers a CCTV-like video stream with full real-time images, accommodating detailed monitoring needs. This mode mirrors traditional CCTV system functionality, offering continuous video streaming.

Features:

- Real-time video streaming.
- Video recording (Optional)

Use Cases:

- Security surveillance for high-risk areas.
- Detailed incident analysis in sensitive environments.
- Ongoing monitoring of public or restricted spaces.

Summary of Juganu’s Optical sensor solution

Juganu’s optical sensor solution is designed to balance the need for detailed analytics and privacy protection across various applications. Each mode offers distinct features tailored to specific use cases, ensuring that partners and end customers can select the optimal solution for their needs.

Juganu’s Audio sensors solution

Juganu’s Audio sensor solution monitor ambient noise levels and provide alerts when levels exceed specified thresholds, converting audio to metadata that only shows DB level, location, and time, ensuring no PII is involved.

Features:

- Real-time noise level monitoring
- Conversion of audio data to non-identifiable metadata
- Alerts for noise levels exceeding predefined thresholds
- No PII

Use Cases: Urban management, event management, industrial compliance

Juganu’s Environmental sensors solution

Juganu’s Environmental sensors solution are designed to monitor essential environmental metrics such as humidity, temperature and pressure. They are crucial for public health and safety, providing timely data without detecting individuals or specific objects.

Features:

- Multi-metric monitoring including humidity, temperature.
- Real-time data collection on environmental conditions
- No PII

Use Cases: Health monitoring, , city environmental applications

Juganu's Lighting Modules

Juganu's Lighting Modules are designed to provide flexible and intelligent lighting solutions. They can be managed remotely, allowing for adjustments in power, optic choices, lighting plans, and intensity to fit different environmental needs. For enhanced functionality, they can optionally be integrated with optical sensors. This integration enables adaptive lighting responses based on detected objects, where the use of PII depends on the specific application and configuration.

Features:

- Remote adjustment of various lighting settings.
- Operates without PII in standard configurations.

Use Cases:

- **Enhanced Energy Efficiency and Lighting Quality:** Automatically adjusts light settings based on environmental conditions, promoting energy conservation and optimal illumination.
- **Adaptive Safety Features:** In scenarios involving optical sensor integration, lighting can change to pre-chosen colors upon detecting specific objects or activities to enhance public safety or guide emergency responses.

Juganu's Wireless Mesh Backhaul Network Module (Jnet1/Jnet2)

The Jnet1 and Jnet2 modules form Juganu's cutting-edge wireless backhaul network technology, enabling cable-less connectivity between light fixtures. This technology supports the creation of extensive, reliable wireless networks that enhance data communication capabilities across multiple fixtures without the need for extensive physical infrastructure.

Features:

- No PII
- Enables robust wireless connectivity between lighting fixtures.
- Supports high-speed, reliable network communication.

Use Cases:

- **Smart City Infrastructure:** Facilitates the deployment of connected city-wide lighting systems that can be managed and monitored from a central point.
- **Event Management:** Enables quick and flexible lighting setup for events or in locations where installing wires is not feasible, such as outdoor concerts or festivals.
- **Large-Scale Installations:** Provides seamless connectivity across large areas like parks, university campuses, and commercial complexes, ensuring consistent lighting and network performance.

Juganu's Application Processor Module

This module serves as the central processing unit within Juganu's lighting fixtures, handling all data processing, decision making, and smart functionality. It executes software that controls various sensors and lighting configurations based on real-time data analysis.

Features:

- No PII
- High-performance data processing capabilities.
- Integrates easily with other Juganu modules for enhanced functionality.

Use Cases:

- **Data-Driven Decisions:** Processes environmental and sensor data to optimize lighting and sensor responses.

Juganu's Wireless Access Point Module

Juganu's Wireless Access Point Module enhances the functionality of each equipped light fixture by providing both Wi-Fi and 5G connectivity. This module transforms light fixtures into versatile connectivity hubs, offering robust Internet access for both public and operational purposes. The dual capability ensures high-speed, reliable wireless communication suitable for a wide range of urban, commercial, and industrial environments.

Features:

- No PII
- Offers Wi-Fi and 5G connectivity from a single module.
- Converts light fixtures into wireless hotspots, providing extensive coverage and accessibility.

Use Cases:

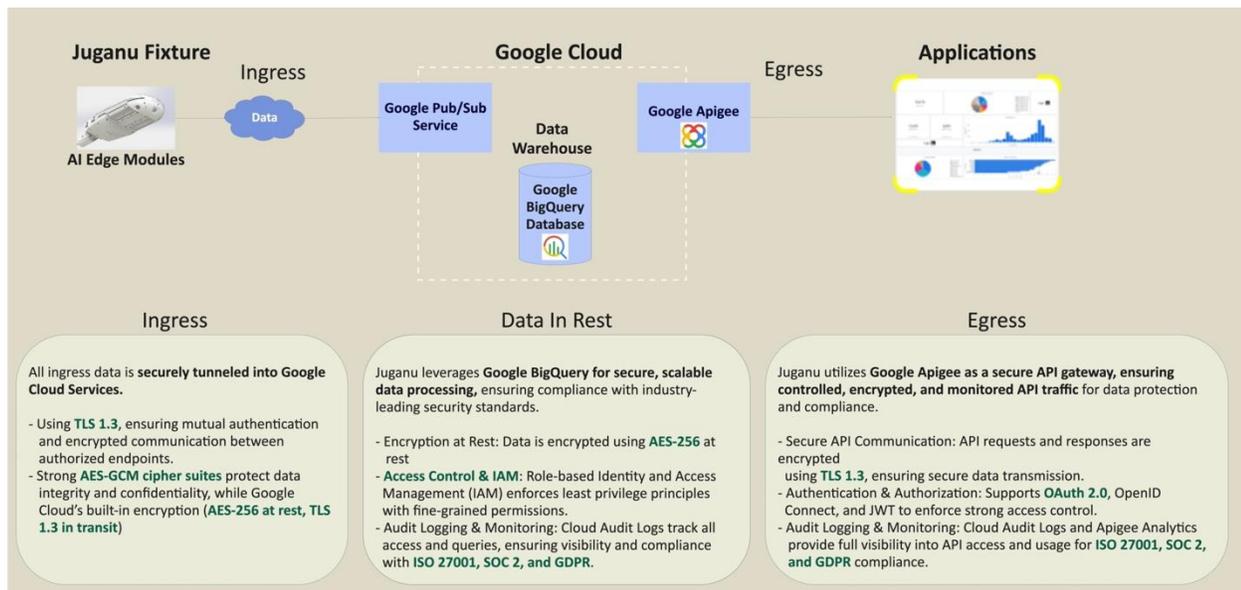
- **Public Internet Access:** Extends high-speed Internet access to parks, streets, and public squares, facilitating digital inclusivity and accessibility in urban and rural areas.
- **Smart City Infrastructure:** Integrates into city-wide networks to support IoT devices, smart city services, and emergency communications, enhancing municipal operations and services.
- **Commercial and Industrial Connectivity:** Provides reliable Internet and data services in commercial complexes and industrial areas, supporting business operations and enhancing customer experiences.

Unified Solutions Platform

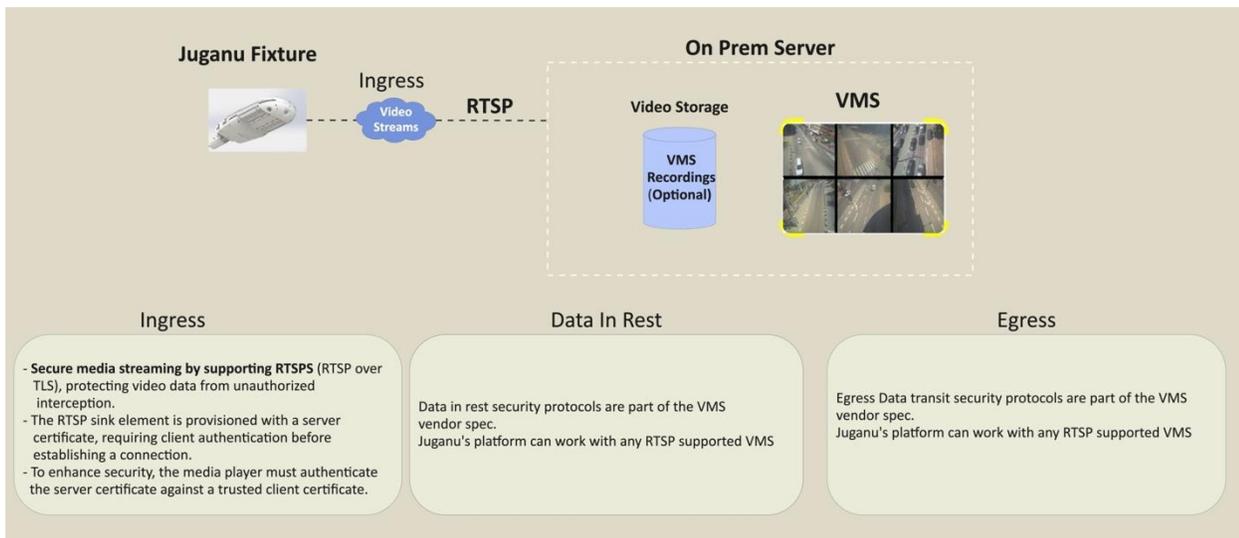
Juganu enables the customization of third-party AI applications tailored to specific end-customer needs. Each application accesses only the essential metadata required for its functionality, ensuring efficient and secure performance.

The following three diagrams illustrate Juganu’s secure design and data path, covering communication, video, and data flows. Each diagram highlights how data is transmitted, processed, and secured, ensuring end-to-end protection and compliance. From AI-powered edge sensors to Google Cloud Services, all ingress data is securely tunneled, access-controlled, and encrypted. Strict authentication, monitoring, and security policies are enforced throughout the system, guaranteeing data integrity, confidentiality, and adherence to industry security standards.

Sensors Data Path:



Video Streams Path:



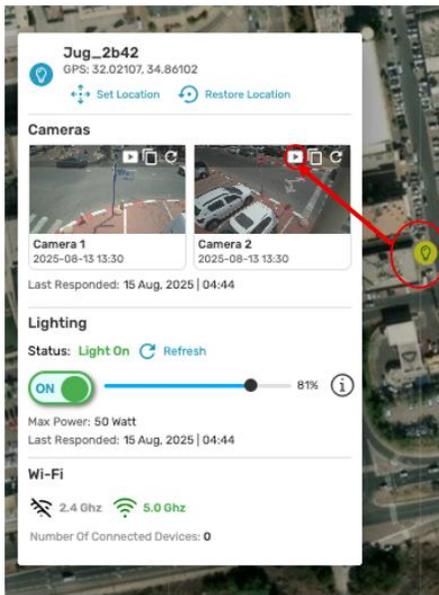
Each Juganu fixture produces two distinct video streams, transmitted in real time using the RTSP protocol. These streams travel across the local network to an on-premises server, where they are received and processed by the client's Video Management System (VMS). Within the VMS, the live feeds from the fixtures can be viewed for monitoring, surveillance, recording, and more.

The video streams remain within the client's local network, typically operating behind a Network Address Translation (NAT) and firewall. Communication between the CAP and the client's VMS occurs over the internal LAN, with access restricted to authorized devices and users. In professional deployments, additional security measures are often implemented to further protect the streams, such as network segmentation with a dedicated VLAN for video devices, strict firewall rules to control permitted devices and ports.

Access to the VMS is typically secured through user authentication

These combined measures help ensure that the video data remains secure within the customer's controlled environment and is protected against unauthorized access or misuse.

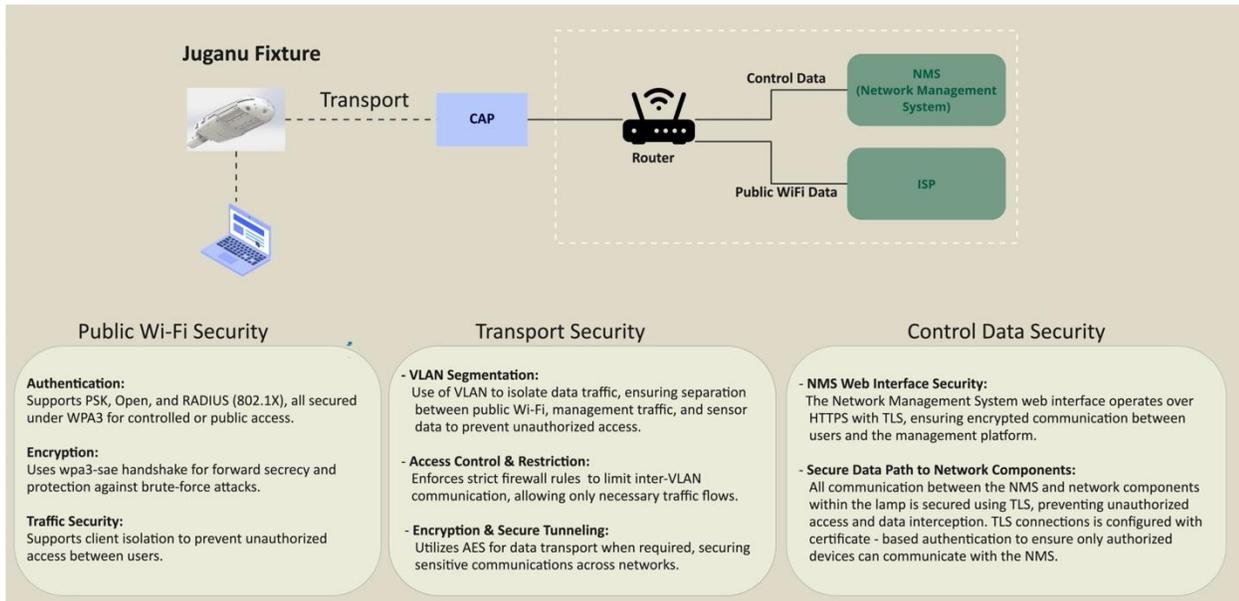
Cloud-Based Live Video Viewing



Juganu offers the ability to view live video streams through the cloud by leveraging WebRTC, a widely adopted real-time communication technology used by applications like Google Meet, Zoom, Microsoft Teams, and WhatsApp. WebRTC enables secure, low-latency video streaming directly between devices without requiring plugins or complex setup. In Juganu’s implementation, each lamp acts as a WebRTC video source. When it comes online, it generates a Session Description Protocol (SDP) “offer” containing its video capabilities and network connection options (ICE candidates), which is sent to the signaling server. When an authenticated user requests to view a feed, the signaling server relays the lamp’s SDP offer to the browser, which responds with an “answer” to establish a secure, direct media connection. This process allows users to access a specific camera stream in real time via the Juganu cloud dashboard

Access to live video through the Juganu cloud dashboard is strictly controlled and requires authentication with a valid username and password. The authentication process is powered by Google Apigee API, which follows Google’s best practices for identity and access management, ensuring only authorized users can initiate the WebRTC signaling process. All communication with the signaling server is encrypted via HTTPS/TLS, and session timeouts further limit exposure from inactive logins. In addition, WebRTC itself is encrypted by default. Every media session uses DTLS for key exchange and SRTP for securing the video streams. Typical negotiated ciphers include TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256 for DTLS and AES_CM_128_HMAC_SHA1_80 for SRTP, ensuring that video data is protected against interception or tampering without requiring any additional configuration.

Communication Path:



Conclusion

Juganu is committed to upholding high standards of data privacy and security, both in our product designs and in our operational procedures. Our goal is to empower our partners and customers while ensuring compliance with relevant data protection regulations, thus fostering an environment of trust and respect for individual privacy rights.