



Smart Light Control and Light Adaptive with Traffic Density

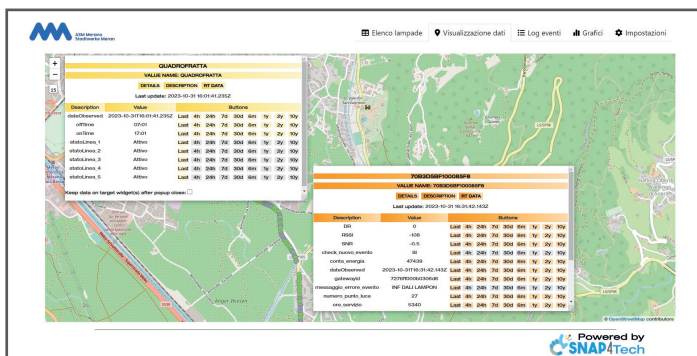
CONNECTED
STREETLIGHTS
SOLUTION
EXPLOITING
SNAP4CITY
PLATFORM

Municipalities need sustainable solutions to reduce energy consumption. Thus, public lighting is a key issue to reach the goal and become more sustainable according to SDG. **Snap4City** open-source solution for smart light management is innovative, economically sustainable and technologically reliable. Public administrations may exploit the solution in easy manner, adopting open technology to avoid vendor lock-in and proprietary technologies

To this end, the **Merano Municipal Services Company (ASM Merano)** with the support of **SNAP4**, exploited the Snap4City platform to implement a smart light management system for monitoring and control public lighting, addressing thousands of controlled luminaries. The solution has been deployed on a public cloud, exploiting the existing LoRaWAN network of Merano, and connecting DALI 2 nodes of FlashNet and not limited to them, that communicate through Lorawan gateways connected to the open-source network server Chirpstack (<https://www.chirpstack.io/>). Snap4City is used for the: dimering profile programming and management of smart light system (unicast and multicast), monitoring status and error management, also including the monitoring of cabinets powering luminaries. Moreover, the smart light management also implemented the adaptive lighting system standard based on traffic conditions (TAI, Traffic Adaptive Installation).

TAI is one of the latest innovations in public smart light management for sustainability. It allows to automatically adjust the illumination on the street on the basis of traffic conditions. Snap4City, based on traffic monitoring data from some measurement points, allows the management of TAI remotely in a simple and flexible way based on the standard defined in UNI11248:2016 by sending the relevant commands for lighting regulation to the affected luminaries in multicast modality. This integrated technology offers numerous advantages for administrations and citizens, including energy savings, reduction of and emissions, and improved road safety.

Thanks to Snap4City dashboards and panels, the operator can monitor and manage all the luminaries and network areas and the quality of services. Snap4City dashboards simplifies the service management modalities including profiles and TAI modalities for the different zones in the areas, and simplify the process in which the city present a mix of LED dimerable and old technology luminaries connected at the same cabinets.

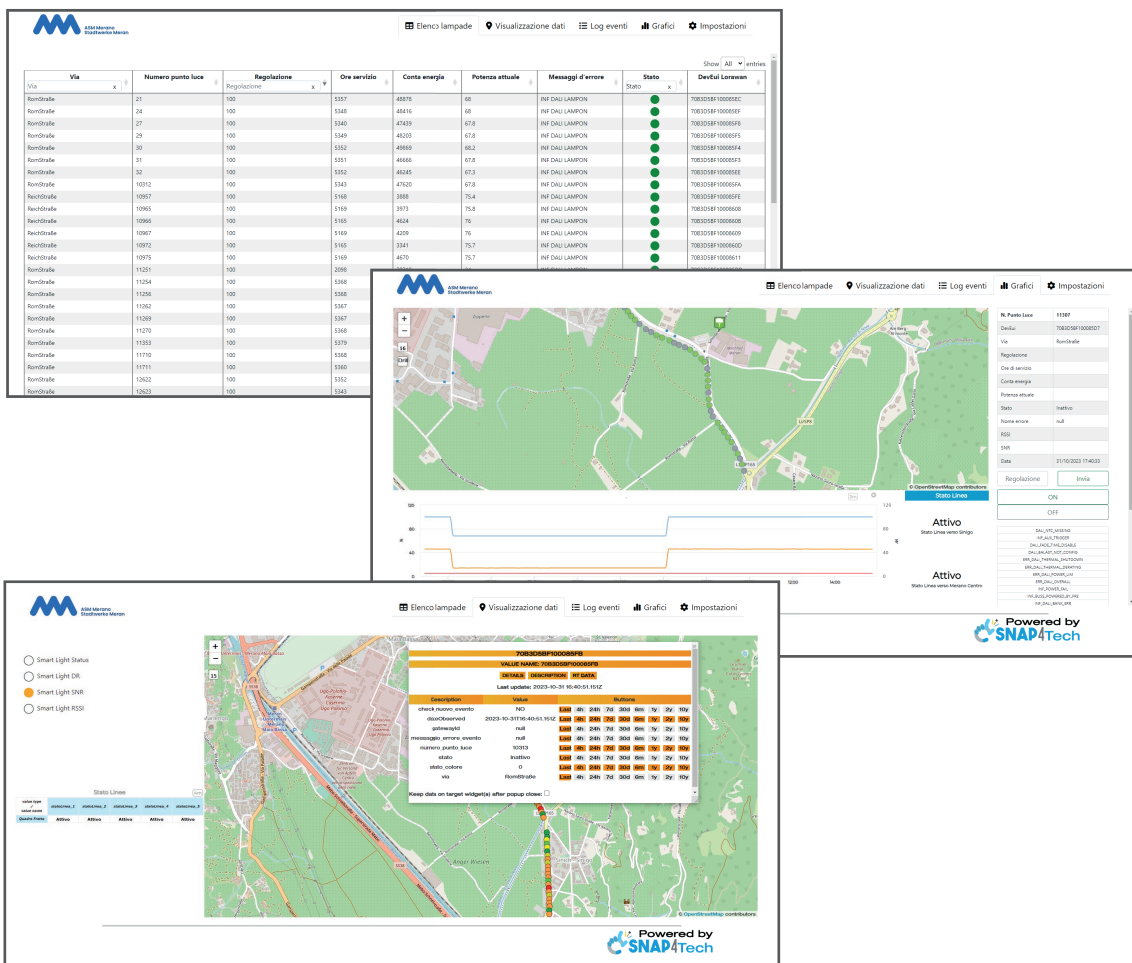


SMART
APPLICATION
TO MONITOR
AND CONTROL
STREETLIGHT
NETWORKS

The screenshot shows two panels from the Snap4City dashboard. The left panel, titled 'Aggiungi un device al multicast', contains a form for adding a new device to a multicast group. It includes fields for 'Multicast2', 'DevEui', 'Multicast address', 'Multicast network session key', and 'Multicast application session key'. The right panel, titled 'Configurazione multicast', shows the configuration for the selected multicast group. It includes a dropdown for 'Multicast2' and checkboxes for 'Set UTC timestamp', 'Set cpPush', and 'Set configuration'. A 'Salva' button is at the bottom of the configuration panel.

In particular, the dashboards are providing:

- The map of the whole city area involved with custom dynamic pins geographically positioned in the map and representing luminaries. Groups, cabinets, changing their status in real time according to the data received. This allows to get an immediate overview of the city status;
- Real time trend of the ingested data allows to monitor the streetlights and cabinets data over time, and send notifications in case of early warning.
- The user interface to manage nodes in the multicast groups, set the configurations, dimming profiles, on/off all nodes connected, etc. by managing in transparent manner the logic to decode/code the protocol messages and commands.
- Programme and manage the TAI (Traffic Adaptive Installation) enabling an integrated and sustainable smart adaptive lighting solution. The dashboard provides an interface for programming the time-controlled variations of luminance level in relation to hourly traffic flow, weather conditions or other parameters.



The implemented solution based on Snap4City, demonstrated the potentiality for an integrated solution that can manage smart city operations in a more flexible manner, helping the municipality and stakeholder to take better decisions. Merano and SNAP4 offered a practical solution to help the city speed up its smart city development and address future challenges.

Extended version accessible from: <https://www.snap4city.org/968>

Contact: <https://www.snap4.eu>

Partners: SNAP4, ASM Merano