

Pelion Device Management lays the Foundation for Taiwan's Smart City

January, 2020

Case Study

Company snapshot

Name: **AAEON Technology Inc.**

Industry: **Technology**

Size: **700+ Employees**

HQ: **Taipei, Taiwan**

Founded: **1992**

<https://www.AAEON.com/en/>

- ✦ City-wide remote lighting control management achieved from one dashboard
- ✦ Insights designed to reduce lifecycle cost and city disruption
- ✦ Streamlined design, deployment and ongoing management
- ✦ Inherently secure solution protecting a device's life cycle

When the City of Taipei put their smart lighting solution out to tender, industrial and embedded systems developer AAEON turned to Arm for a solution that not only met the brief, but offered a sustainable solution that can be adapted to scale for the future.

Challenge

City officials were looking for a reduction in energy costs, infrastructure life cycle cost and greater control over their utilities by deploying IoT nodes to 4,000 lampposts that would sense ambient light levels and attenuate output to reduce energy consumption.

A stringent security specification combined with the burden of developing their own RTOS and IoT Platform led AAEON to look for partners who could reduce their time to market and offer a solution that could be easily replicated in other South Asian cities.

Solution

Working with the Pelion IoT platform resulted in reduced complexity and time taken to design, deploy and manage a city's device estate. The AAEON lighting node allows Facilities Managers to control Taipei's IoT-enabled lighting infrastructure from the Pelion Device Management platform by simply plugging into a NEMA socket controller that is found on most streetlights, enabling remote administered applications that instruct lampposts to power up, attenuate, or switch off lights during off-peak hours.

“Mbed OS and Pelion IoT Platform provided us with a simple route to delivering the city’s digital transformation. We particularly liked how the IoT Operating System (IoT OS) can be ported across different Arm microcontrollers and different product families by using readily available libraries. Isolated security in-kernel and secure communication channels over the internet offered peace of mind for Taipei’s essential infrastructure.”

Kevin Ting, Senior Manager,
Design Manufacturing
Service at AAEON
Technology Inc

City-Wide Cost Reductions

The Taipei taxpayer benefited from far more than just lower energy bills. The life cycle cost of each lamppost is reduced by relaying live insights that can reduce downtime through preventative maintenance and eradicating the bureaucracy of reporting and processing a failed light.

“Repair costs to a failed light can amount to twice the cost of the light itself by the time you factor in a night shift of engineers, public liability insurance, and the disruption caused by road closures. Thankfully the insights provided by Pelion minimizes all these factors by optimizing predictive maintenance planning that pinpoints failures on a closed street before they happen, dramatically reducing repeat visits to the same location.”

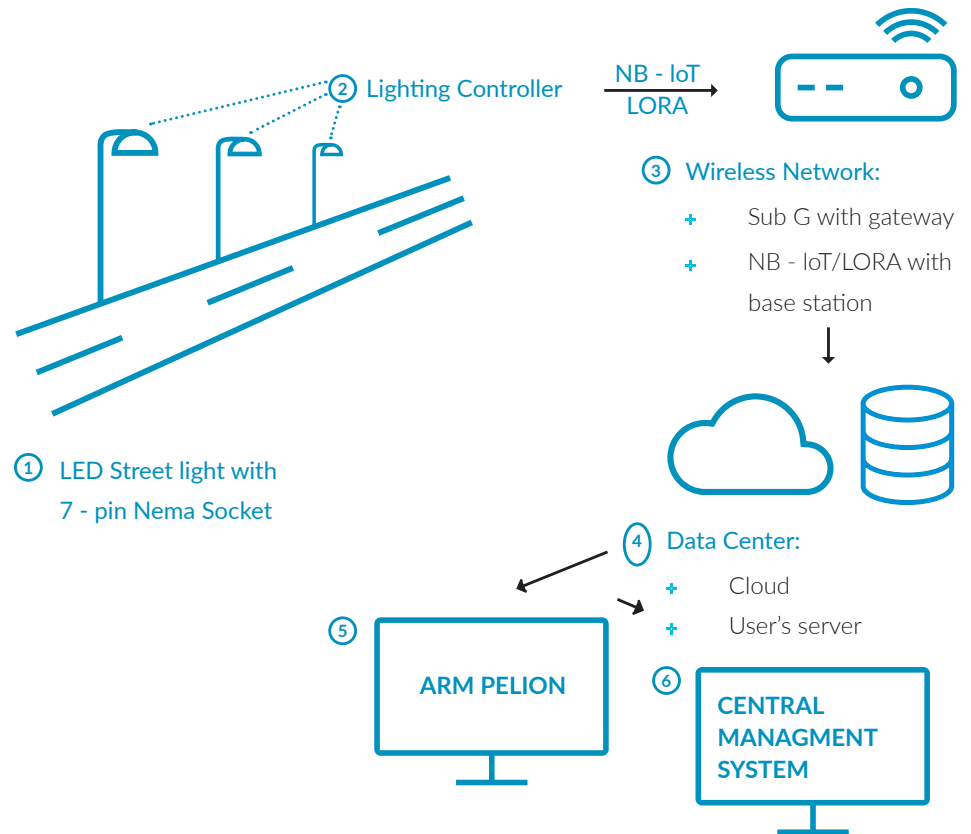
Kevin Ting, Senior Manager, Design Manufacturing Service at AAEON Technology Inc.

Company-Wide Cost Reductions

AAEON was quick to divest the burden of developing a secure RTOS and IoT platform and identified Mbed OS and Pelion IoT Platform as their preferred choice to help their team deploy 4,000 nodes far sooner than developing their own proprietary solution.

AAEON utilized a range of Arm-based solutions including:

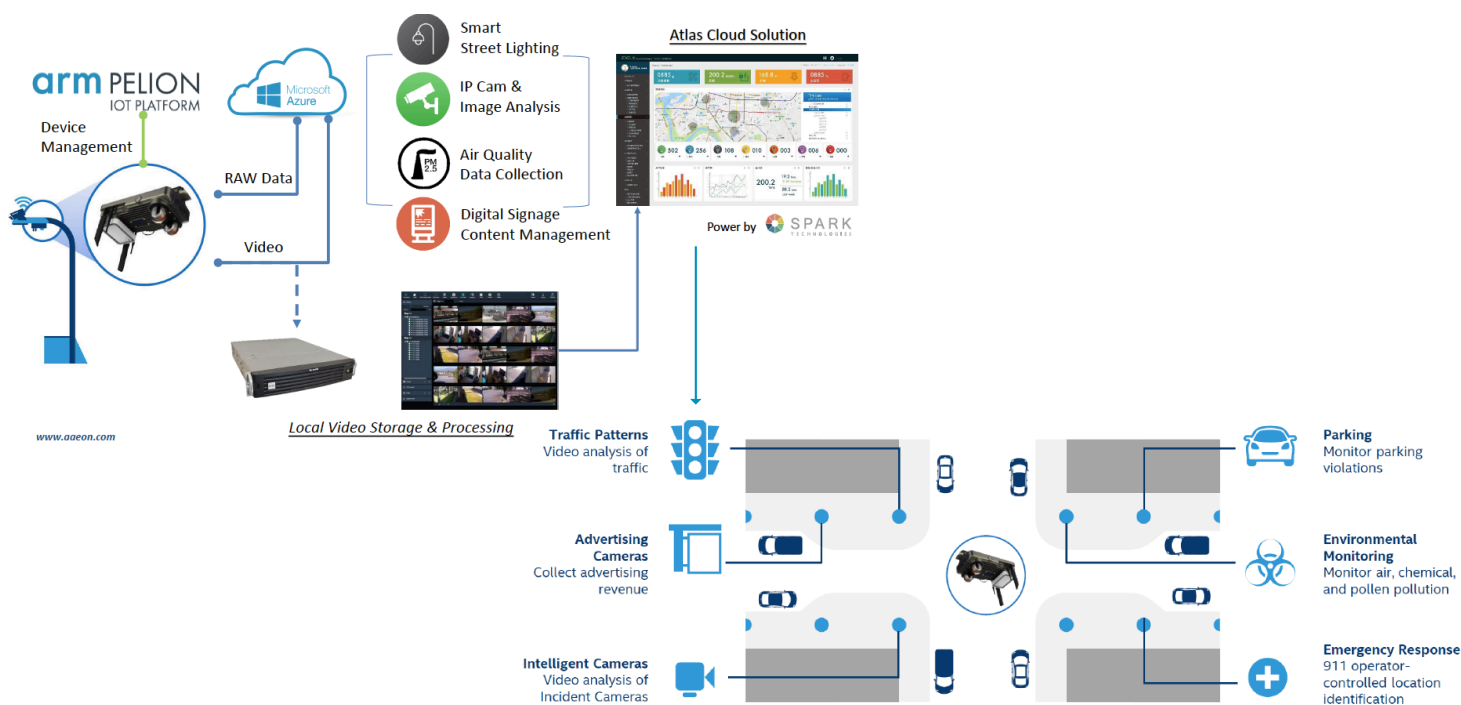
- ✦ A Cortex M-based STM32F429IEH6 chipset for the MCU
- ✦ Ublox SARA-N410 NB-IoT communication modules
- ✦ Mbed OS version 5.11.5
- ✦ Pelion Device Management Platform
- ✦ Toolchain including Secure Device Access and Mbed Compiler



Pelion Device Management acted as the single dashboard that takes care of all ongoing city-wide management, allowing remote firmware updates to be administered from a central location and Pelion's SDA (Secure Device Access) functionality that grants third party Facility Managers and Engineers access at a specific time with the ability to read device data without the option to corrupt or overwrite it.

A Bright Future for Taipei

AAEON is already leveraging Arm Cortex- based processors to help facilitate Taipei's smart city vision, whilst administering additional functionality and frictionless software updates thanks to the Pelion IoT Platform.



Pelion's streamlined provisioning process will help deploy an additional 25,000 IoT devices across the city by the end of 2020, forming the backbone of the city's IoT infrastructure and enabling additional features including:

Data Driven Insights

- + Live weather conditions
- + Air quality
- + Noise conditions
- + Live traffic updates
- + Digital signage
- + Provisioning access to public networks

Features

- + Free Wi-Fi
- + USB /Wireless charging
- + UPS battery backup
- + Interactive touchscreen displaying insights
- + Digital signage
- + Emergency intercom and video call

In closing, Kevin commented:

'Partnering with Arm has meant we've reached market far sooner than expected, offered additional functionality that helps generate new revenues for AAEON that can be repeated in cities around the world.'

To learn more about Arm Pelion Device Management, visit <https://www.pelion.com/iot-device-management/>