



Alphatronics connects waste management sites to IoT to boost business efficiency

Goal

To better serve remote waste management facilities, Alphatronics offers automated, IoT-connected access control systems that minimize service visits and improve operational efficiencies. Alphatronics is leveraging new and emerging cellular connectivity standards to provide low cost, low-power connectivity in rural locations without wired access to communications or electricity.

Benefits

- Alphatronics systems help waste management customers easily and securely connect existing infrastructure to IoT.
- Alphatronics automated, connected control system eliminates the need for onsite staffing at remote waste management facilities, and reduces service calls.
- The control system ensures only approved customers can access the site and monitors how much waste they leave for easier billing and regulatory compliance.
- By leveraging cellular standards like GPRS, Alphatronics enables low power connectivity in remote locations lacking wired power and connectivity options.

Arm and Alphatronics deliver IoT solutions to waste management market

Belgium takes its recycling and waste management very seriously. The Flanders area of Belgium boasts the highest percentage per capita of recycled domestic and industrial waste globally,

and Alphatronics played a key role in making the country's waste management program so successful.

For 30 years, Alphatronics has been a leading developer of automated control systems used

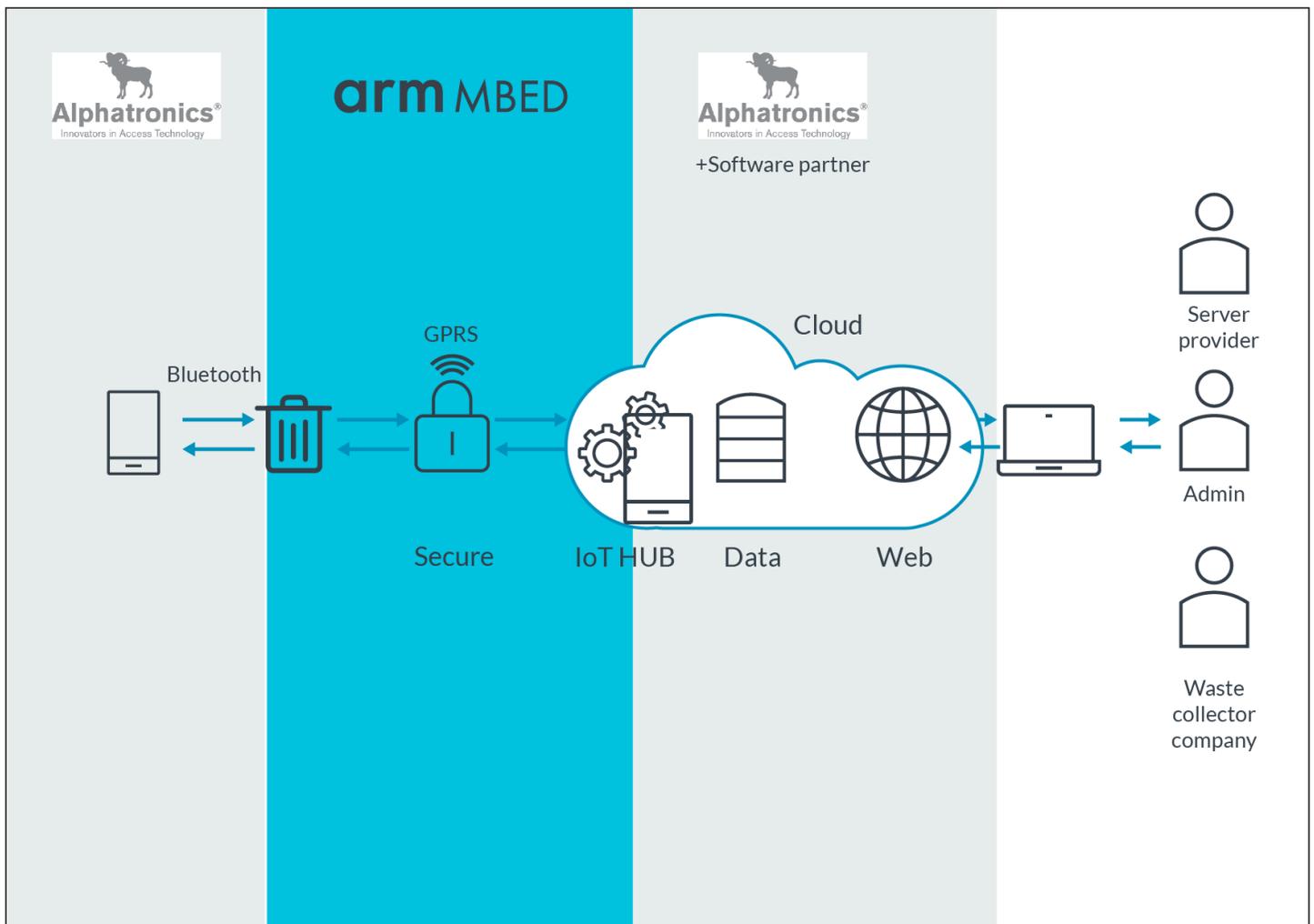


to grant users access to remote waste recycling centers and other industrial sites. Alpatronics also designs systems that measure the amounts of waste disposed by each user for billing and regulatory compliance.

So, it was no surprise when Alpatronics got a call from a French waste collection company asking for help. The waste collection company operates a fleet of trucks responsible for collecting recyclables and garbage from more than 350 facilities throughout France, with many sites located in remote rural communities. The company was wasting manpower and fuel by dispatching trucks to a waste

management site only to find the containers almost empty, making the service call unnecessary and driving up operating expenses.

The company asked Alpatronics to develop an IoT-connected access control system that could not only manage access for authorized local users to enter the site, but also monitor the site's containers to determine when they were full enough to merit a service call. Since the customer forecast a demand of 5,000 access control units over seven years, including ongoing support and maintenance of the units, Alpatronics started work on a solution.



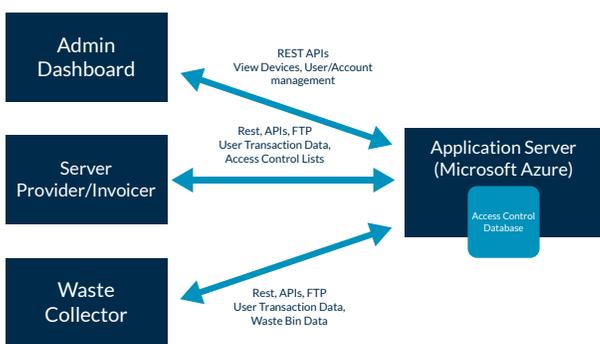
The end-to-end Alpatronics waste management platform

Bringing IoT connectivity to remote sites

To develop an access solution that met their customer's needs, Alpatronics needed a design with lowpower operation and strong support for industrial connectivity standards. As many of the waste management sites are in remote areas with no nearby power lines, the access systems had to be powered by solar panels and batteries. And while Alpatronics determined that GPRS was the best connectivity option for its French customer, it had to support other standards in case future customers had different connectivity requirements.

Additionally, Alpatronics didn't have enough time to develop a product from scratch as it had done in the past; the customer's tight deadline required the use of an existing IoT platform to shorten development time. After careful consideration, the Alpatronics team selected a microcontroller (MCU) from ST Micro and the Arm Mbed IoT device platform as the hardware/software platform for their product.

The team chose Arm Mbed because of its strong support among microcontroller vendors, its broad portfolio of connectivity IP and native API

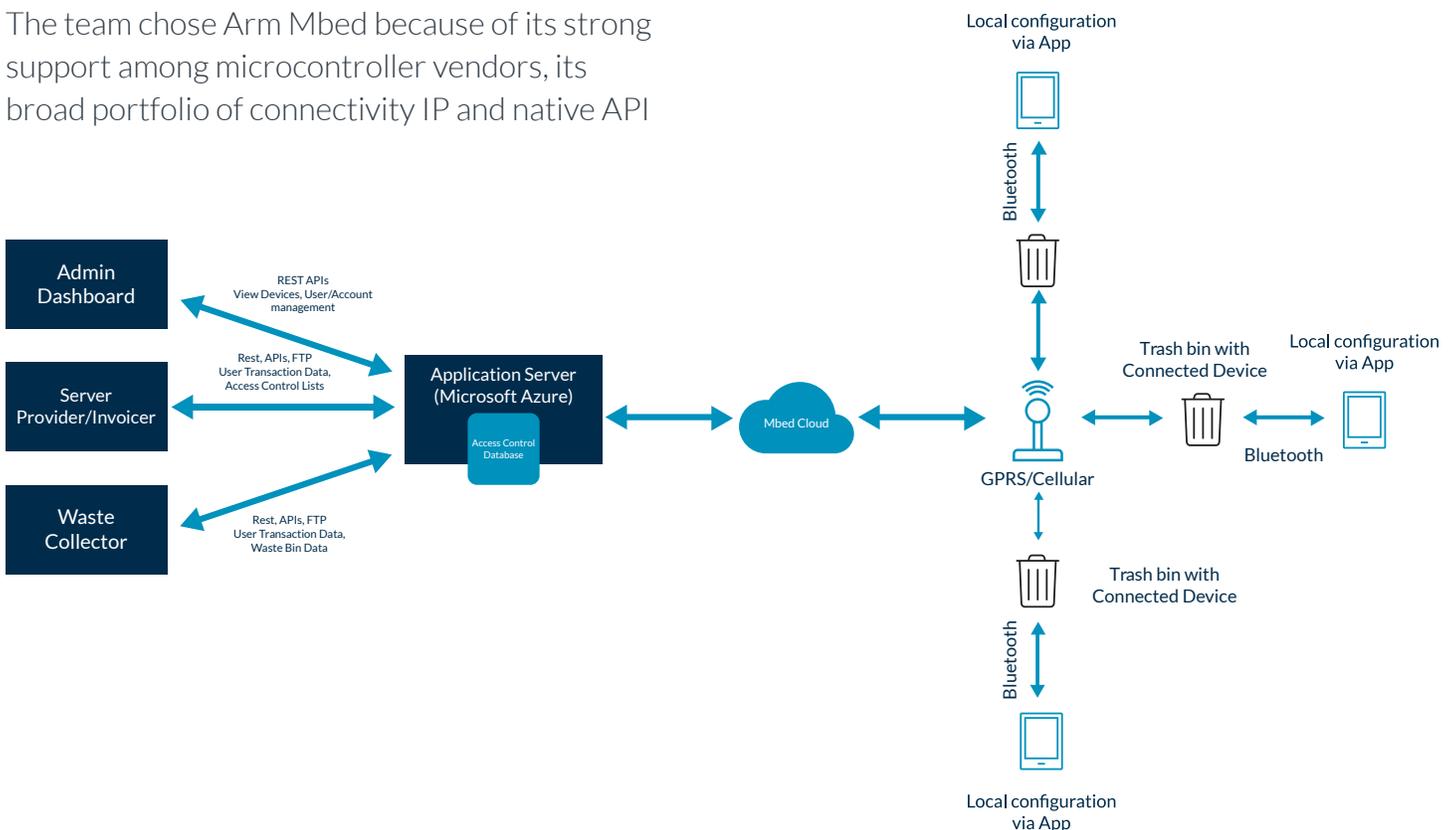


support for sleep and low-power modes to keep power consumption at a minimum. The quality of Arm's customer service and support also proved instrumental in bringing the new access control system to market.

Working with Arm makes IoT easier

"Once we knew GPRS was the best connectivity solution for the access control system and a cooperation with Mbed was the best fit, we faced a daunting challenge: no one had previously used that combination in a remote device management application,"

says Jasmien Vanvooren, COO at Alpatronics. "Arm provided us with a dedicated application engineer who worked with us for three months to help develop our software. Arm's commitment to our success is why Alpatronics could deliver the waste management industry's remote access system with support for remote device management over GPRS."



Visualizing data, controlling local bins and invoicing users - all easily handled by Alpatronics' solution

Alphatronics wants to create control systems that are truly modular and versatile, applicable for a wide array of potential customers and supporting a variety of connectivity and device power options. In the future, Alphatronics is looking to support additional connectivity standards like Wi-Fi, LPWAN (LoRa/NB-IoT) and 3G/4G cellular.

For future requirements, the Mbed IoT device platform has the software stacks and modem drivers Alphatronics needs to quickly re-engineer access control solutions on a platform that is easy to use and secure. Alphatronics is looking at deploying solutions for use cases beyond waste management where Arm's Mbed platform can serve as the backbone. One such example is a European company that is planning to build bicycle storage lockers for a major city and might engage Alphatronics to design the automated locking system.

For more information about the Arm Mbed IoT device platform and additional IoT use cases, visit www.mbed.com.

About Arm and Arm Mbed

Arm® is at the heart of the world's most advanced digital products. Our technology enables the creation of new markets and transformation of industries and society. We design scalable, energy-efficient processors and related technologies in applications ranging from sensors to servers, including smartphones, tablets, enterprise infrastructure and the Internet of Things (IoT). The paradigm shift introduced by explosive growth in the Internet of Things is transforming the future of technology within our lives and businesses. Reliably and securely connecting billions of everyday devices is a challenge that must be met with an array of efficient, scalable and productive embedded software and web services.

The Arm® Mbed™ IoT Device Platform provides the technology and ecosystem that is the foundation for creating and deploying low-power, connected and secure IoT devices at scale.

To discuss how Arm Mbed Cloud and the Mbed partnership can help you to accelerate and scale IoT deployments, visit cloud.mbed.com/contact or email iot-web-sales@arm.com.