LTE-M:
Advantages of Next-Gen Connectivity

FierceWireless

SPONSORED BY:

aeris®

CONTENTS

INTRODUCTION

Many businesses are interested in the Internet of Things (IoT) thanks to the possible benefits of implementing IoT-ready devices, including the ability to streamline workflows and cut expenses.[1] Yet few consider how these things will connect to a network to transmit data and receive information from outside sources in order to make accurate predictions.

This logistical piece is one of the most important, as the usefulness of IoT-enabled devices can vary greatly based on how quickly they are able to send key metrics and important data measurements. A delay of even a few seconds can present disaster for customer-facing industries that rely on data accuracy to provide exceptional service. For example, if a warehouse with IoT-enabled inventory is too slow to update, customers may be sold goods that are no longer in stock, creating a longer waiting period to receive the item.

An important secondary concern for companies in a real-world scenario is preserving the battery life of these devices so they can be in place for as long as possible. Constantly replacing device batteries in a large-scale application is unrealistic and cuts into time and cost savings businesses hope to see when implementing IoT-enabled devices. Finding a way to connect to a reliable network without draining battery life is just as important as putting the equipment in place and deploying it.

HOW DOES LTE-M HELP SOLVE THESE ISSUES?

Long-Term Evolution for Machines (LTE-M) presents a simple solution to these issues. LTE-M is a low-power, wide-area IoT connectivity protocol that can piggyback on existing LTE networks to provide the limited amount of data needed. The slower speeds provided by this network are ideal for use with IoT-enabled devices.[2] Current use cases show that when used with LTE-M, device batteries can last years longer than those in use today.[3] This extended battery life allows companies to take full advantage of the usefulness of the device.

LTE-M can provide numerous additional benefits to enterprises of all industries, including:

- Lower cost modules provide significant savings.
- Extended device battery life allows companies to use devices for as long as possible.
- Enhanced security features reduce loss and provide valuable analytics data for theft prevention.
- Improved signal penetration reduces error rate.

INDUSTRIES POISED TO TAKE ADVANTAGE OF LTE-M

Embracing new technology can be challenging for any sector that is slow to embrace change overall. Through the creation of new standards and data sharing between companies and governmental agencies, progress can happen much faster and consumers can experience the benefits much sooner. This paradigm shift can result in better customer service and improved profit margins industrywide.

Several industries have embraced the potential for widespread changes that IoT devices bring and stand poised to take advantage of the functionality of LTE-M. By experimenting with this technology and refining the results, some industries will progress quickly and find the best ways to incorporate IoT-enabled devices into daily processes.

> " LTE-M is a low-power, wide-area IoT connectivity protocol that can piggyback on existing LTE networks to provide the limited amount of data needed. "

FierceWireless

SPONSORED BY:
aeris

CONSUMER ELECTRONICS

As the demand for consumer solutions that make life easier continues to grow, manufacturers are looking to expand into even more parts of the home and daily life. IoT devices currently available to consumers include door locks, home thermostats and kitchen appliances.[4] The demand for, and interest in, these products continues to grow as consumers become more aware of the possibilities. The integration of artificial intelligence is a key part of the end value to the consumer, allowing them to automate simple tasks like starting the dishwasher and more complex ones, such as analyzing internal and external temperatures for the ideal thermostat setting in each room.

FierceWireless
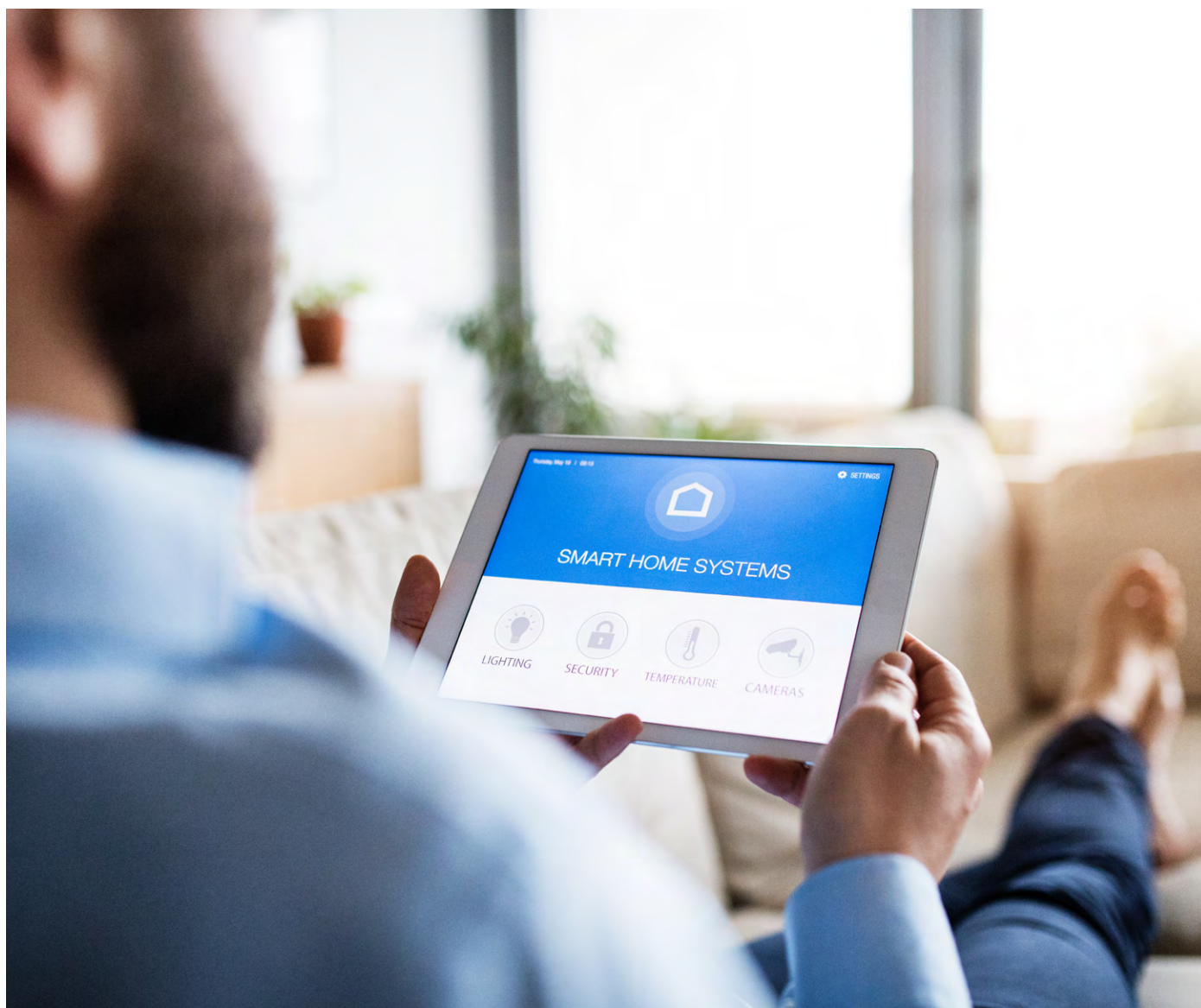
HEALTHCARE

The healthcare paradigm is shifting, as patients transition away from traditional approaches and increasingly choose high-deductible insurance plans that lead them to be more critical of healthcare providers. In response, providers and medical facilities are using innovative tactics to improve the medical monitoring, medicinal adherence and last-mile health delivery services. These tactics have resulted in a high adoption rate of IoT devices for the healthcare industry, with more than half of the healthcare organizations reporting IoT usage in a recent Forbes survey.[5]

As medical providers continue to work with technology, they are finding new ways to incorporate IoT-enabled devices and machine learning to make it easier to predict health risks for patients and even whole sections of the population. These large-scale solutions can help address health epidemics in underserved or economically challenged regions. Preventing further health issues across segments of the population benefits everyone involved, including patients, providers, insurers, and medical facilities.

FierceWireless | SPONSORED BY: aeris
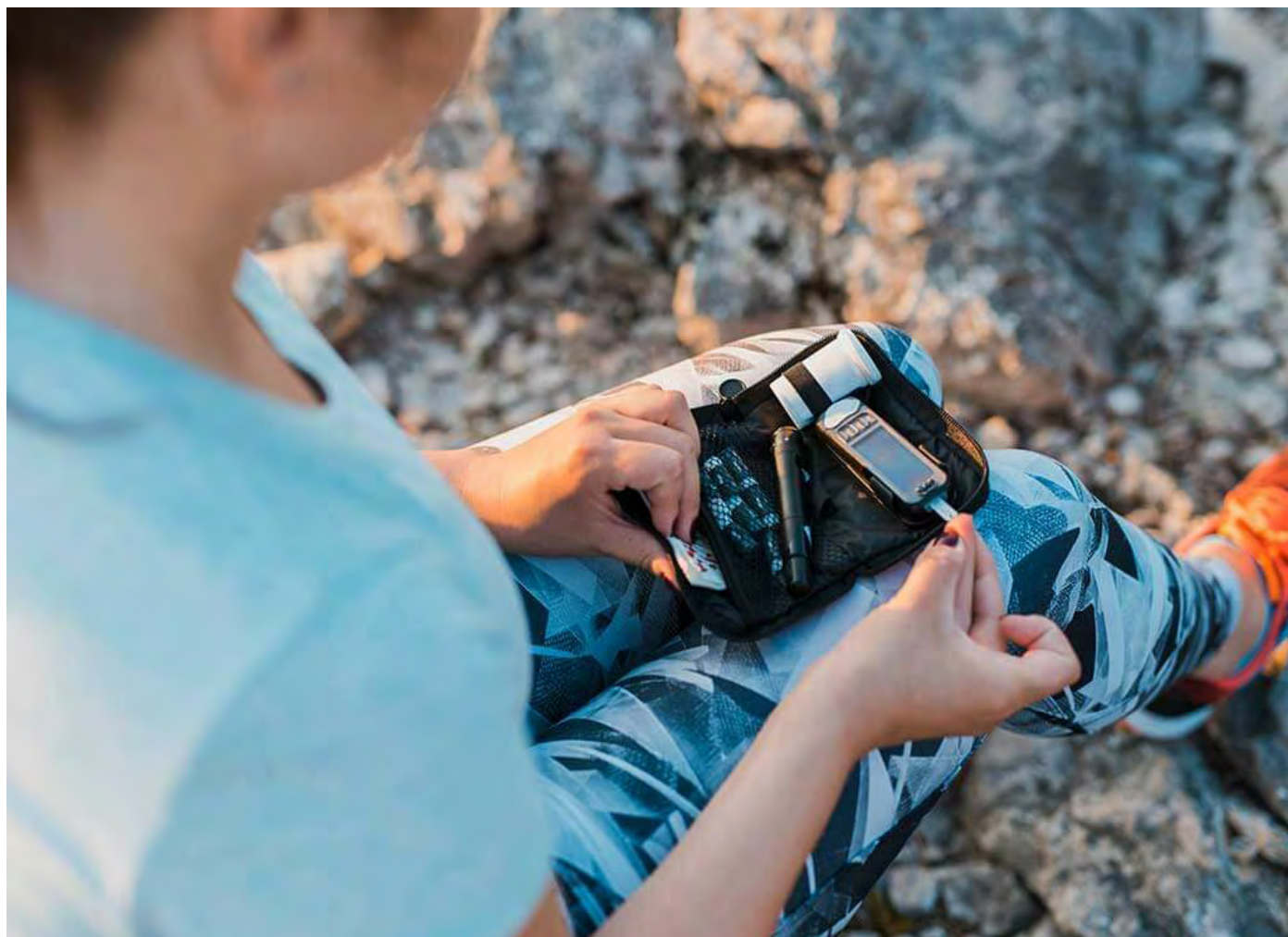
TRANSPORTATION

Self-driving cars and the safety and privacy implications they bring have dominated headlines, but they are far from the only IoT-equipped device to take to the road. Driverless cars still may be years away from widespread use as legislators decide how to govern them. Meanwhile, transportation companies are already using remote monitoring to track fleet productivity, compliance and safety. The robust analytics and data that come in from these remote monitoring devices can help companies find areas to save on expenses, while they also have the potential to create safer roadways.

Governmental agencies are busy exploring ways that technology can make public transportation safer and required maintenance more efficient. Deployment of sensors and cameras can help identify wear and tear and other routine issues long before passengers notice any difference in the way their vehicle runs.

Aeris Intelligent IoT Network + LTE-M

Aeris Intelligent IoT Network is a dynamic, software-driven network that continuously evolves with new capabilities, such as new connectivity options of LTE-M, as well as extended functionality, including ConnectionLock and Connectivity-Aware OTA.

Meeting security and power conservation levels suited for global deployments in multiple business sectors, Aeris Intelligent IoT Network leverages LTE-M's lower-cost modules, enables extended battery life, provides better signal penetration, and has the ability to use existing infrastructure. This creates the best possible IoT connectivity solution for security, scaling, and cost.

LTE-M (also known as CAT-M) is a bi-directional, standards-based low power wide area technology that supports IoT through lower device complexity while providing extended coverage with prolonged battery life. LTE-M does not need a new infrastructure as it can piggyback on existing LTE networks. That means a carrier can update software on its network, get LTE-M functional, and not spend any additional funds on infrastructure or support services.

Security with Aeris ConnectionLock™

The Aeris Intelligent IoT Network includes the extended security capability of Aeris ConnectionLock that acts as a software-based IoT firewall that is implemented within the Aeris network. This allows customer devices to connect securely to a set of pre-selected IP addresses or endpoints, and prevent any fraudulent use by blocking access to any endpoint that has not been selected by the customer. As result, this significantly reduces the security risk for customer devices.

This Aeris security solution is implemented at the network level so it doesn't add any complexity to the IoT device software. Customers do not need to implement any logic at the application level or in their business processes to receive the benefits of ConnectionLock.

Updates with Aeris Connectivity-Aware OTA APIs

With the click of a control-center button, over-the-air (OTA) updates can be deployed to thousands of IoT devices at once rather than requiring each device in the field to be manually modified. Aeris Connectivity-Aware OTA updates eliminate the need to send technicians into the field, save owners time and money, and make IoT deployments vastly more scalable. The ability to make changes to many devices remotely is important especially for operators of large-scale IoT deployments where updating devices manually would be a nearly impossible task.

To resolve many of these challenges, the Aeris Intelligent IoT Network provides well-documented REST-based APIs that can be integrated into customer OTA management workflows. Aeris Connectivity-Aware OTA APIs provide relevant connectivity information, including if the device is in an active data-session or if the device is attached to the cellular network or which cell tower the device is attached to.

Part of the attraction of the Aeris OTA solution is that it lowers operational complexity and the associated operational costs for OTA management. It does so by streamlining OTA device targeting and reducing the number of retries. All of these play a big role in completion time for large-scale OTA updates.

And to simplify these processes even further, the Aeris solution engineering teams always are available to help during the onboarding process.

How can Aeris assist you?

HOW WILL LTE-M EVOLVE AS MOBILE NETWORKS TRANSITION TO 5G?

It's an exceptional time to be a developer or network as LTE-M moves forward and 5G connectivity becomes a reality. The evolution of LTE-M stands to progress quickly as companies vie for a share of the market. Due to the widespread adoption of this network throughout the United States, developers and corporations alike are understandably intrigued by new ways to use the network and integrate automation into more business dealings.

Currently, only one U.S. network supports voice services on the LTE-M network, but other networks are developing more innovations to help them attract more enterprise-level customers. Carriers will divide LTE-M offerings into levels designed to support businesses of all sizes, based on the data rates a business requires. This will help smaller businesses begin to use the IoT without spending what larger enterprises might spend to deploy a solution.

With 5G a fast-approaching reality, analysts expect an explosion of IoT activity and increased demand for real-time, dynamic data. The design of this network anticipates this need and allows for uses that will power devices and processes worldwide. With low latency and spectrum efficiency key areas of focus in this network, IoT devices are expected to become better and faster at analyzing our world and predicting what we need before we can even ask for it.

References

1 "What Is IoT? Defining the Internet of Things (IoT)." Aeris, www.aeris.com/what-is-iot/.
2 Dano, Mike. "Verizon Gives a Voice to Its LTE M Network, but AT&T Is Still in Testing." FierceWireless, 29 Aug. 2018, www.fiercewireless.com/iot/verizon-gives-a-voice-to-its-lte-m-network.
3 "Long Term Evolution for Machines: LTE-M." Internet of Things, www.gsma.com/iot/long-term-evolution-machine-type-communication-lte-mtc-cat-m1/.
4 "5 Industries That Are Winning with IoT." DMNews.com, www.dmnews.com/data/article/13034551/5-industries-that-are-winning-with-iot.
5 Team, Insights. "How IoT Is Impacting 7 Key Industries Today." Forbes, 4 Oct. 2018, www.forbes.com/sites/insights-inteliot/2018/08/24/how-iot-is-impacting-7-key-industries-today/#5aafbc111a84.

ABOUT AERIS: