



Particle

2019 STATE OF IOT REPORT

EXECUTIVE SUMMARY

The IoT industry is in an era of rapid proliferation, with industry experts projecting that IoT will have a total potential economic impact of up to **\$11.1 trillion a year by 2025**.¹

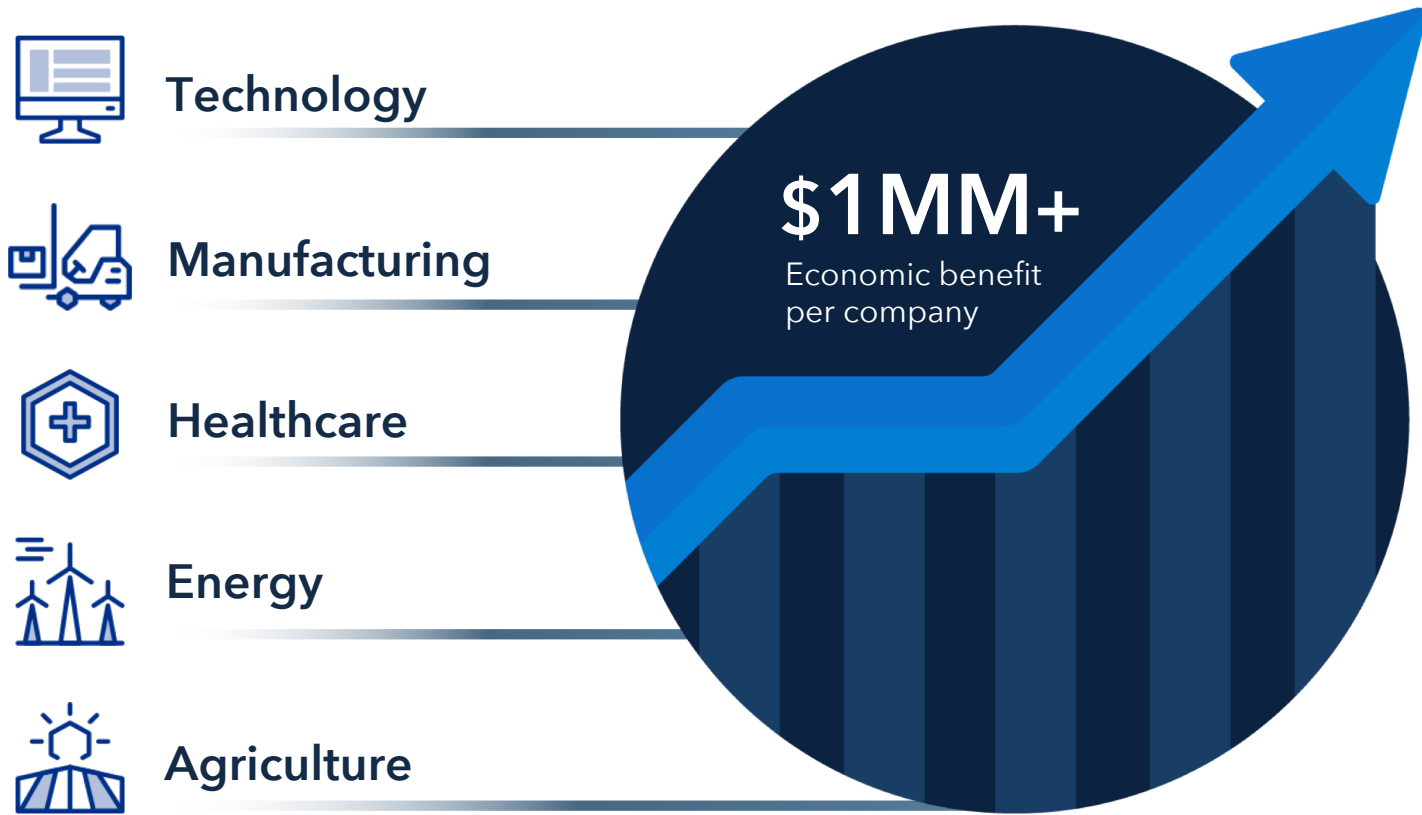
With so much opportunity, it makes sense why so many are looking to connect their products and enter the IoT arena. However, as more and more companies enter the space, they are facing unparalleled challenges when building and deploying IoT projects.

That's why, this year, we asked over 800 professionals to weigh in on the economic opportunity and development challenges associated with the Internet of Things. With the findings from this report, we hope to give you the insights that enable you to progress to the next phase of your IoT journey.



INDUSTRIES MOST BULLISH ON IoT

Top 5 industries expected to reap a \$1MM+ from IoT



The Internet of Things is being adopted rapidly across industries, but it can be challenging to determine which businesses are reaping the most benefit from their IoT initiatives.

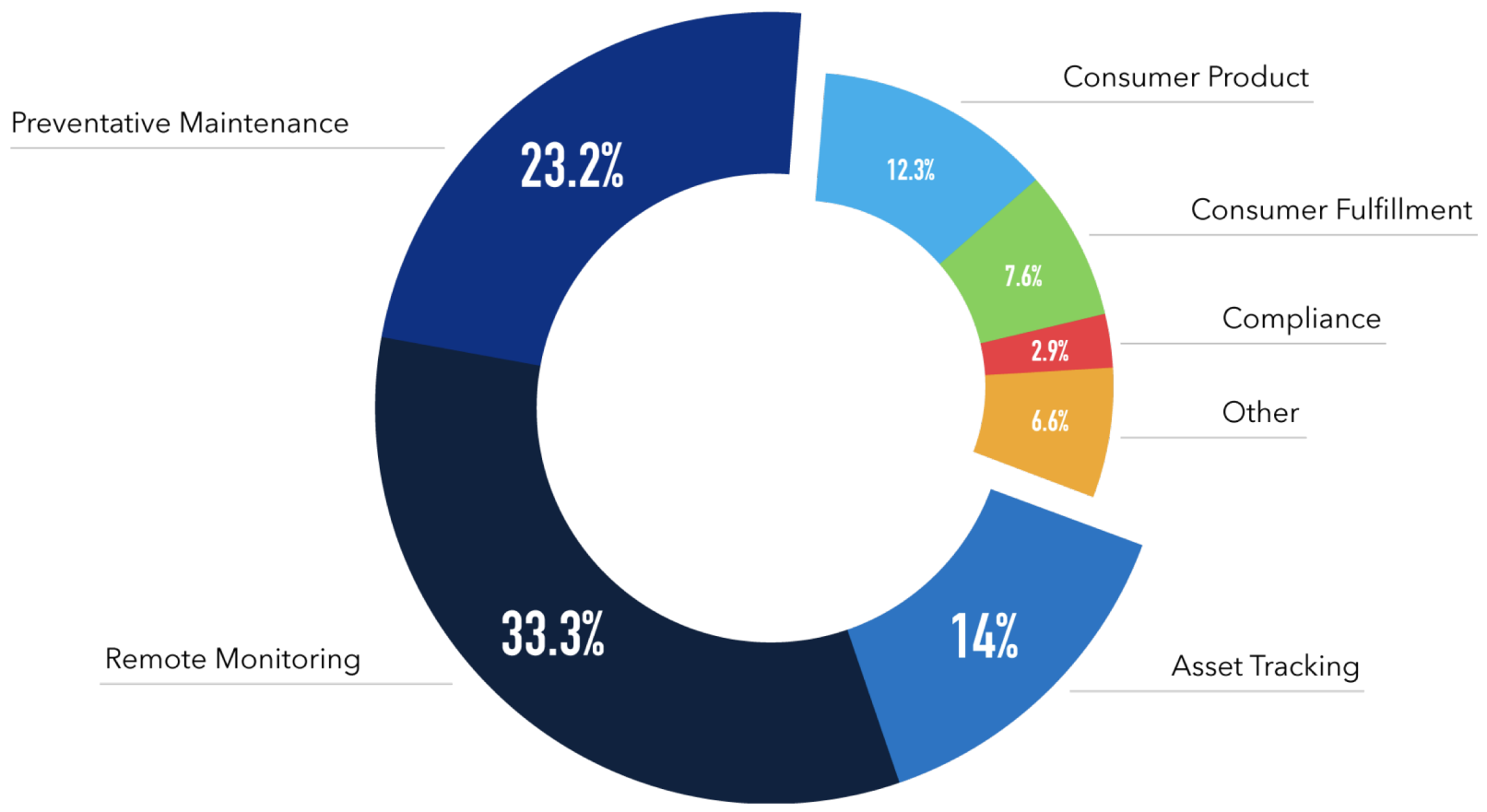
From our survey, respondents who reported working in a technology, manufacturing, healthcare, agriculture, or energy related industry expected to reap \$1 million or more from their IoT products.

TOP IoT BUSINESS USE CASES

Creating business value trumps consumer value

While there are many ways you can create value with IoT, respondents reported they primarily use IoT for remote monitoring, preventative maintenance, and asset tracking.

This shows that a significant number of respondents are primarily using IoT to generate business value rather than consumer value.



TOP IoT BUSINESS USE CASE INSIGHTS

Remote monitoring, preventative maintenance, and asset tracking can deliver value in many different forms



Preventative maintenance systems can provide up to **545% return on investment** for businesses.¹



Asset tracking systems can help companies outperform their peers in terms of **workforce utilization by 40%**.²

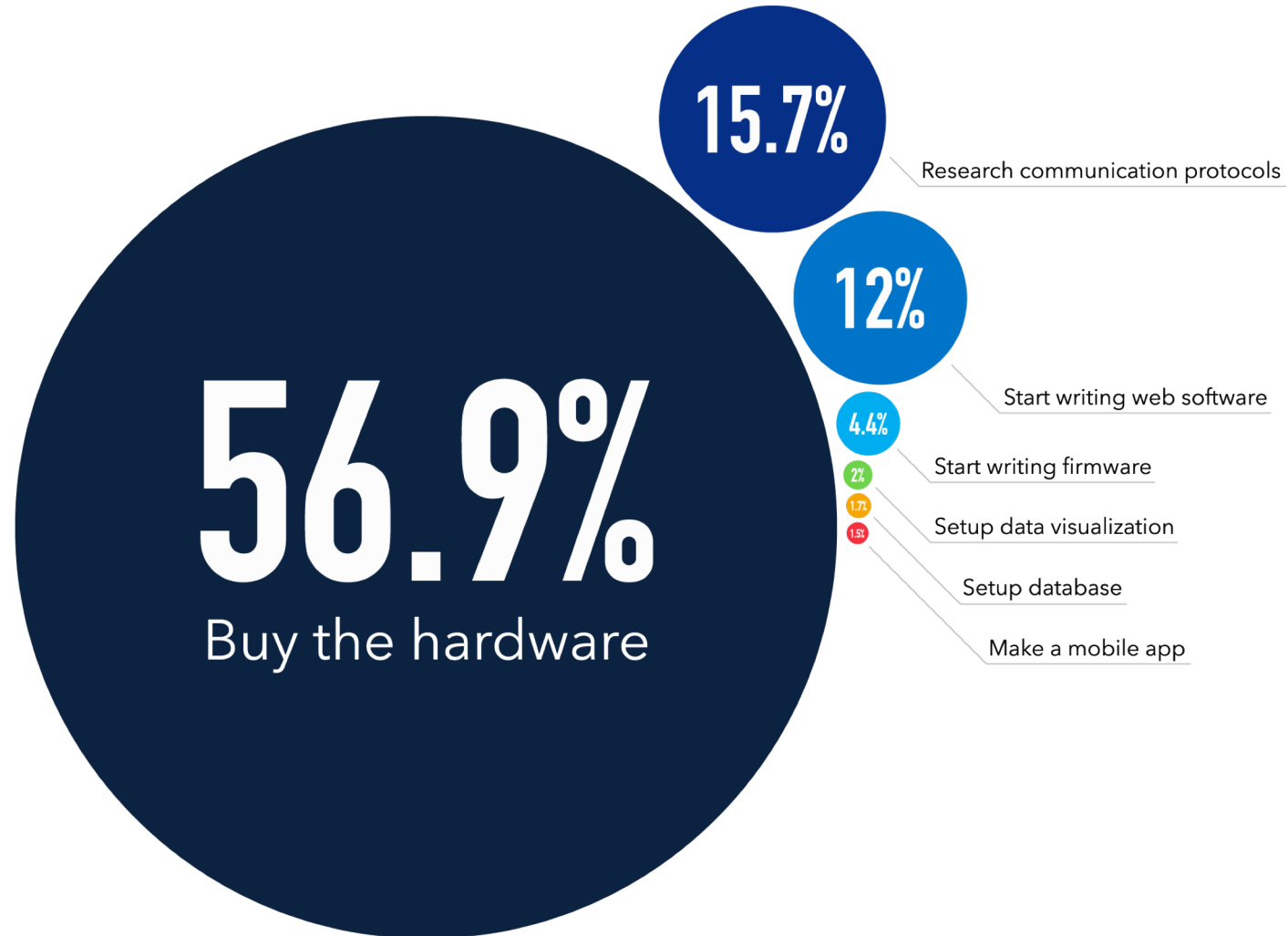


60% of manufacturers will use analytics data recorded from embedded devices to analyze processes and identify optimization possibilities.³

57% OF PRODUCT CREATORS BUY IoT HARDWARE FIRST

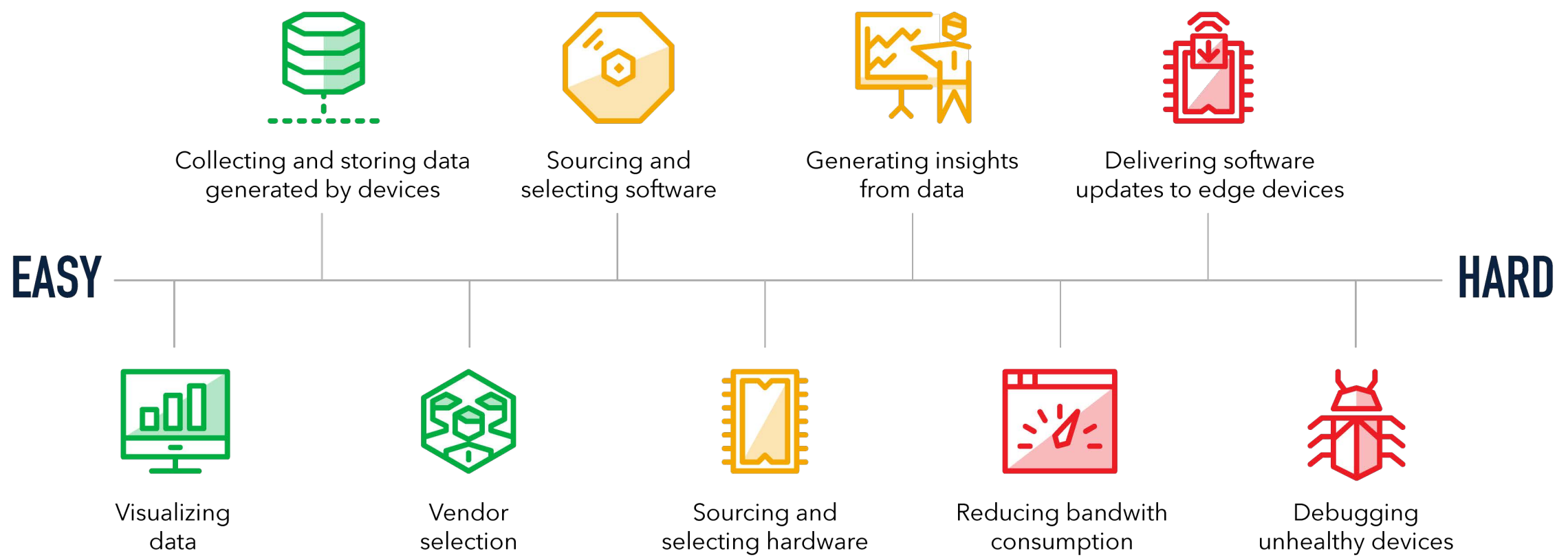
A majority of respondents (57%) reported that they bought IoT hardware (development kits, components, etc.) first when starting a new IoT initiative.

Whatever the mission, IoT hardware provides businesses a means to quickly connect an object to the Internet and prototype an idea. Thus, the infrastructure supporting embedded hardware (or lack of) can mean the difference for the ability to rapidly prototype.



WHAT'S ACTUALLY HARD ABOUT IoT?

We asked survey respondents to rank the difficulty of the following IoT development tasks. The results showed:



TOP THREE MOST CHALLENGING DEVELOPMENT TASKS

The following percentages represent the ratio of respondents who listed the following as the hardest when developing an IoT product.



55%

of respondents listed debugging unhealthy devices as difficult.



40%

of respondents listed delivering software updates to edge devices as difficult.



36%

of respondents listed reducing bandwidth consumption as difficult.

TOP THREE LEAST CHALLENGING DEVELOPMENT TASKS

The following percentages represent the ratio of respondents who listed the following as the hardest when developing an IoT product.



20%

of respondents found collecting and storing data to be a challenging task.



23%

of respondents listed vendor selection to be a challenging task.



23%

of respondents found visualizing data to be a challenging task.

THE WHY IN WHAT'S HARD ABOUT IoT

"Over-the-air (OTA) firmware updates and remote diagnostic functionality are a vital component of any IoT platform. Companies should test these features out before investing in any IoT platform."

Jeff Eiden
Senior Product Manager at Particle

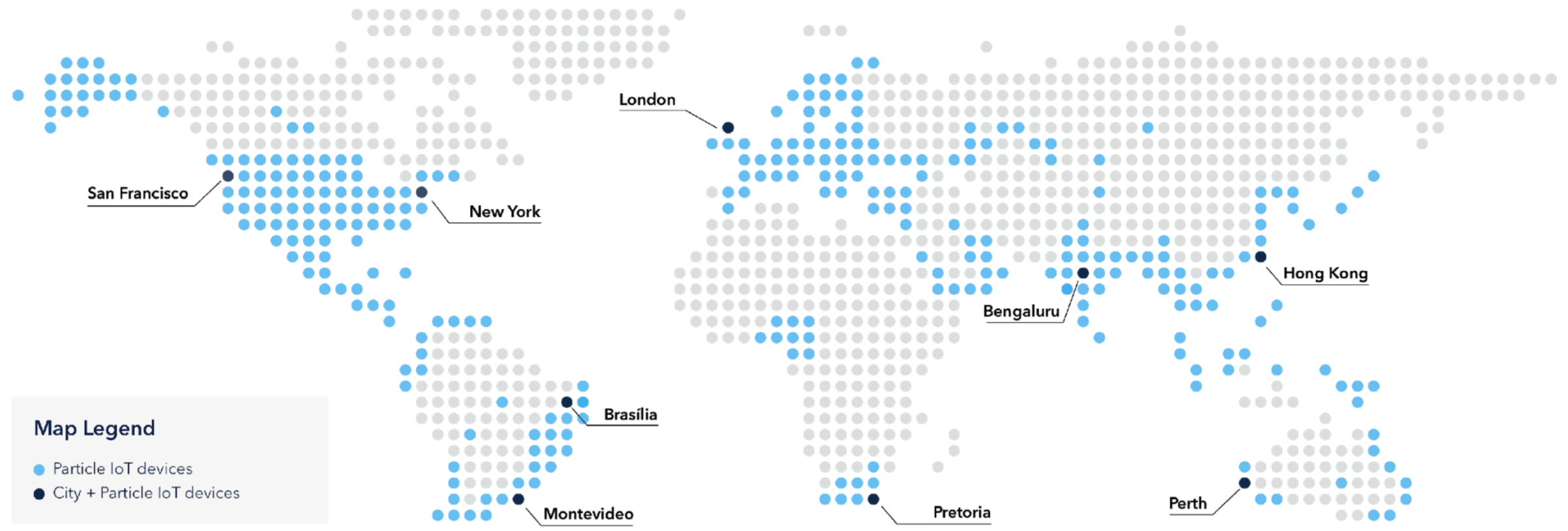
The IoT development process is complex, and requires expertise across a variety of skillsets. What is striking about our respondents' responses is that the same three development tasks proved to be the most challenging across all industries (debugging unhealthy devices, delivering software updates, and reducing bandwidth consumption).

The theme is clear, interfacing with embedded hardware and managing *how* the software gets to and from edge devices is consistently more challenging than managing data once you have it.

For product builders who are looking to prototype quickly and bring solutions to market fast, finding an IoT provider that abstracts low level complexity and reduces the need to spin up supporting infrastructure can be a key differentiator.

THE GLOBAL REACH OF IoT

As the Internet of Things has developed, the number of IoT devices around the world has increased significantly. The number of IoT devices increases around urban areas, but can still be found in remote areas around the world. This map visualizes where **170,000 developers** have deployed Particle IoT devices around the world.



HOW TO START YOUR IoT JOURNEY

There are many challenges to building an IoT product. However, you can avoid these potential development challenges and ensure your IoT product is deployed successfully by finding a strong technical IoT partner.

If you're looking for an IoT partner, Particle provides everything you need to power your IoT product, from device to cloud. As a trusted partner, Particle has helped many companies (like Jacuzzi, Logical Advantage, and Opti) build smart solutions that cut costs and help grow new revenue streams.

To learn more, you can visit the [Particle Store](#) to start your IoT journey or [consult our team of IoT experts](#) if you have any questions.

