

# IoT: BIG BENEFITS

## for Small and Medium Businesses

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# C O N T E N T S

- IoT: The Door to Business Opportunity .....3
- What Is the Internet of Things?  .....4
- The Power of IoT for Businesses .....5
- AeroFarms Reaps Rewards from IoT .....6
- JTG Daugherty Uses IoT to Speed Ahead .....7
- SMB Drivers and Challenges for IoT .....8
- IoT for SMBs: It Takes a Village.....9
- Automating Compliance, Reducing Costs and Improving Quality in the Food Industry.....10
-  Managing Outdoor Security .....11
- Perspective.....12

# IoT: The Door to Business Opportunity

The internet has spawned yet another game changer: the Internet of Things, or IoT. IoT connects objects, people and animals to the internet with sensors that enable them to send and receive data. Using IoT, people can monitor, measure, access and manage what's happening with things in the physical environment more efficiently.

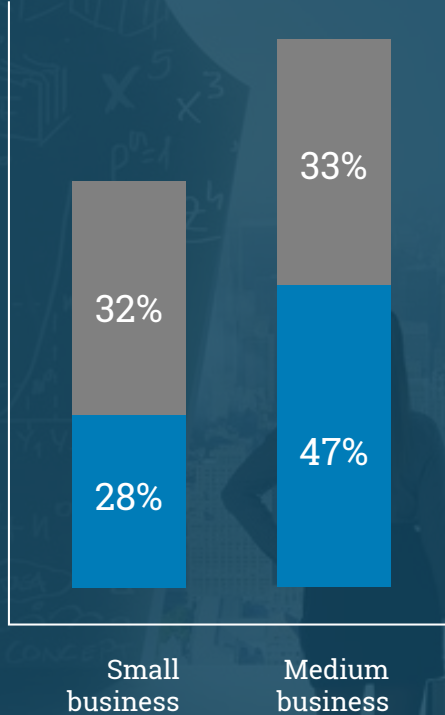
While consumer IoT devices have garnered much of the early buzz, most experts agree that business and public sector opportunities will dwarf those on the consumer side. IoT can deliver benefits in efficiency, customer experience, safety and new revenue models.

Replacing manual data collection and subjective judgments with automated data collection enables businesses to precisely monitor what's happening—whether on the factory floor or on a farm. Once this accurate information is harnessed, companies can analyze it to improve operational efficiencies, boost performance and increase security. IoT can also help companies better engage customers and develop new services and business models.

Small and medium businesses (SMBs) are increasingly intrigued by the possibilities that IoT offers. In some cases, IoT can give agile SMBs the chance to leapfrog larger, slower-moving organizations.

## SMALL AND MEDIUM BUSINESSES: CURRENT AND PLANNED IOT INVESTMENTS BY EMPLOYEE SIZE

- Currently Investing
- Planning to invest in next 12-24 month



Percentage of Respondents

Source: SMB Group 2017 Digital Transformation Study

# What Is the Internet of Things?

As with most tech terms, different people define IoT in different ways. In layman's terms, you can think about IoT as a smart system that integrates physical and digital components so they can interact with each other. Sensors in objects or the environment are programmed to send data over a network automatically, so users can monitor, measure, access and manage these assets more efficiently.

Some of the following technologies underpin IoT:

- The internet itself, which links networks and computers together, enabling computers to connect and exchange information around the globe
- Embedded systems, which combine computer hardware and software to perform specific functions within larger systems

- Sensors, which track and detect physical changes—such as temperature, light, pressure, sound and motion—and transmit this information over the network (Sensors can also track logical changes, such as the presence or absence of an electronically traceable entity, location or activity.)
- Edge computing gateways, which perform analytics on data locally to reduce latency and ensure that only meaningful information is relayed to the data center or cloud for further analysis

IoT solutions also use other technologies—including analytics, artificial intelligence (AI) and machine learning (ML)—to digitize things in the physical world so they can more easily manage, interact with and report on them.

## ARCHITECTED FOR MANAGEMENT, SECURITY AND SCALE



# The Power of IoT for Businesses

IoT is growing at an exponential pace—however you measure it. IDC and Intel project that the number of IoT objects will grow from 2 billion in 2006 to a projected 200 billion by 2020, equating to about 26 smart objects for every person in the world. Meanwhile, Gartner forecasts 26 billion smart objects by 2020.

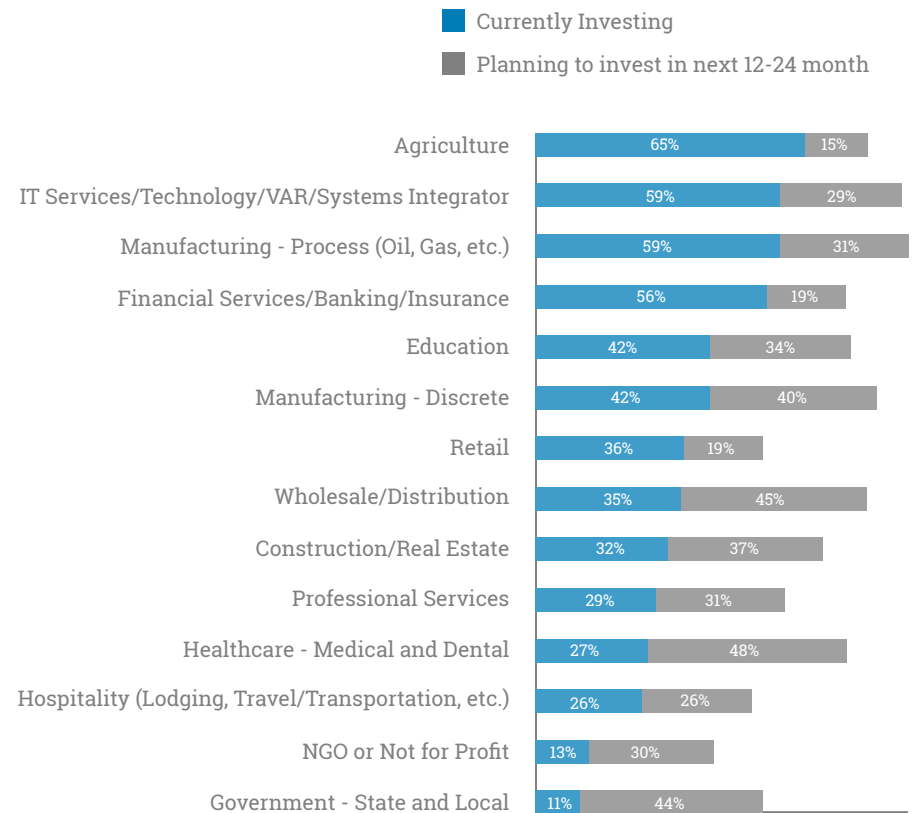
Industrial IoT will account for the lion’s share of the IoT opportunity. Every day, new IoT solutions are coming to market to help businesses address the problems—and opportunities—that keep them up at night. Companies can use IoT to manage their assets more efficiently, improve quality and safety, and improve the customer experience—all in a more intelligent, proactive manner.

Here are some examples of industrial IT that might be familiar:

- Airlines that monitor the performance of plane parts to predict maintenance requirements and improve flight and fuel efficiency
- Smart buildings that track energy use in real time to manage heating and cooling resources more effectively
- Manufacturers that monitor equipment so they can be notified and perform required maintenance before a failure occurs
- Office equipment that knows when it’s running low on supplies and automatically reorders more

SMBs in agriculture, manufacturing and IT services are currently leading the charge, but IoT promises to provide substantial benefits to businesses in almost any industry.

## SMALL AND MEDIUM BUSINESSES: CURRENT AND PLANNED INVESTMENTS IN IoT BY INDUSTRY




Percentage of Respondents




As developers integrate newer technologies such as artificial intelligence, machine learning and blockchain into IoT solutions, they will continue to reshape the future of businesses in almost every industry and micro-vertical.

## AeroFarms Reaps Rewards from IoT

Indoor vertical farming has the potential to transform agriculture—and to feed the planet’s growing population in a more sustainable manner.


As the world leader in indoor vertical agriculture, AeroFarms has achieved 390 times greater productivity and ly than a traditional, commercial field farm—while using 95% less water. IoT technology is key to enabling this.

Working with Dell EMC experts, AeroFarms created a comprehensive infrastructure that encompasses edge gateways, rugged tablets, machine learning systems, analytics and networking.

Sensors and cameras in the aeroponic growing system gather data on everything from moisture and nutrients to light and oxygen in the indoor farm and send it to  **Dell IoT Edge Gateways**—which relay it over the network to farm operators’ Dell tablets and also send it to a local server cluster for further monitoring and analysis.



This infrastructure is helping AeroFarms to accomplish the following:

- **Optimize processes to improve taste, texture, color, nutrition and yield.** AeroFarms wirelessly tracks inputs through each stage of farming—seeding, germination, growing, harvesting and packaging—and analyzes it to improve product quality.
- **Increase yields and nutritional content.** Cameras with integrated structured light anners send data from grow trays to **Dell Edge Gateways**, which create 3D topological images of each tray. When an anomaly is spotted, the system alerts operators on the farm floor in real time. It also sends the data to local servers for further analysis. Using machine learning, AeroFarms continually updates the anomaly detection algorithm running on the gateways.

**“Dell Technologies has a unique approach leveraging all seven of their divisions to develop a turnkey solution that meets our needs today and as we scale further in the future.”**

– **David Rosenberg,**  
AeroFarms Co-Founder and CEO

## JTG Daugherty Uses IoT to Speed Ahead

Racing at speeds of 190 mph or more, successful pit stops are essential for JTG Daugherty's NASCAR race car performance. In fact, auto races can be won and lost based on the many actions—from wheel changing to refueling—that the pit crew performs in a matter of seconds.

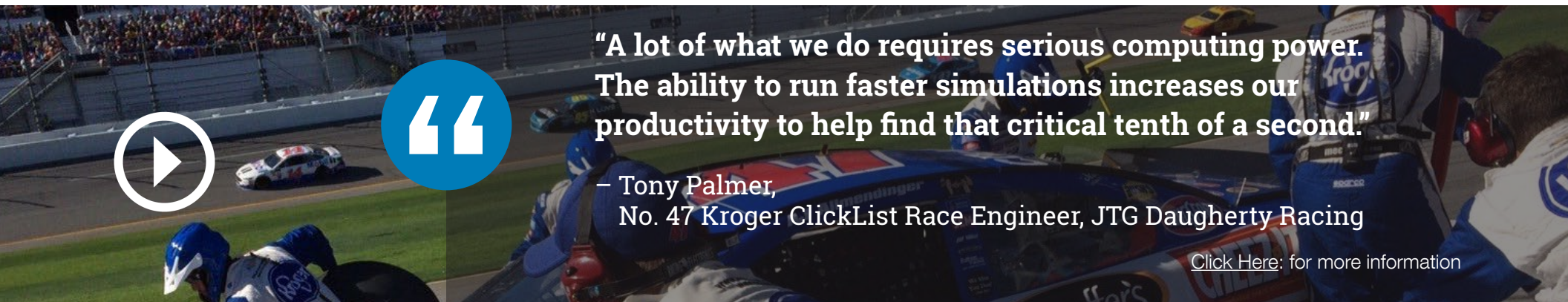
JTG Daugherty wanted a solution that would help crew members and engineers to better analyze data and improve the split-second decisions that can make or break race results.

The company collaborated with Dell EMC to combine Dell IoT, client and server solutions to maximize performance during races. Now, the team can view updated scoring and timing data—collected via Dell Edge Gateway devices—on their Dell workstations and rugged tablets. They can take data downloaded from a car's electronic control unit to see information on brake and throttle pressure, exhaust temperatures and speed after each lap. Using tablets, tire

specialists in pit stops can monitor how tires are wearing during the race to better understand how specific tire or engine changes affect performance.

The solution has helped JTG Daugherty to achieve the following:

- **Reduce the time needed to run a full race simulation from 45 to 12.5 minutes**, helping teams to more easily qualify for races.
- **Increase the productivity of its tire specialists by 75%.**
- **Provide technicians with a complete picture of car performance.** They can view real-time NASCAR data and other race updates on their mobile devices in pit boxes and in qualifying boxes in the field, running on the gateways.



**“A lot of what we do requires serious computing power. The ability to run faster simulations increases our productivity to help find that critical tenth of a second.”**

– Tony Palmer,  
No. 47 Kroger ClickList Race Engineer, JTG Daugherty Racing

[Click Here](#) for more information

## SMB Drivers and Challenges for IoT

Early IoT adopters like AeroFarms and JTG Daugherty are already getting valuable returns on their IoT investments.

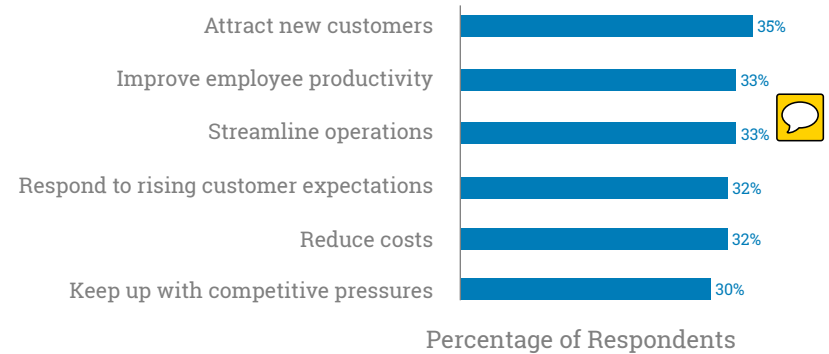
However, even though SMB Groups 2017 Digital Transformation Study indicates 59% of SMB decision makers agree that technology and digital initiatives are a core part of their business strategy, they face many hurdles when it comes to deploying new solutions.

Even when SMBs understand how new technologies, such as IoT, can help them to run their businesses more efficiently, its often difficult to figure out which specific solutions will work well in their businesses, and provide the best return on investment.

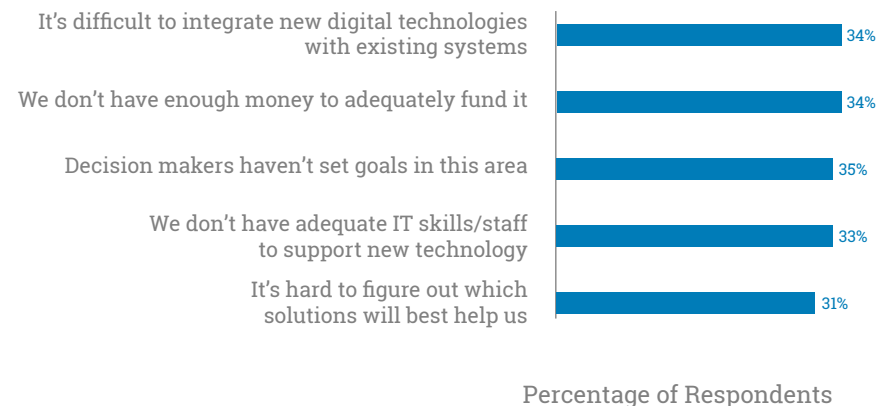
Other factors, such as difficulty integrating new solutions with existing ones, budget constraints, and a dearth of technology expertise needed to design, build and implement IoT solutions on their own.

To turn their visions into reality, most SMBs need pre-integrated, turnkey solutions that are developed with their specific use cases and requirements in mind.

### TOP FIVE DRIVERS TO INVEST IN NEW TECHNOLOGY



### TOP FIVE CHALLENGES TO INVEST IN NEW TECHNOLOGY



Source: SMB Group 2017 Digital Transformation Study



# IoT for SMBs: It Takes a Village

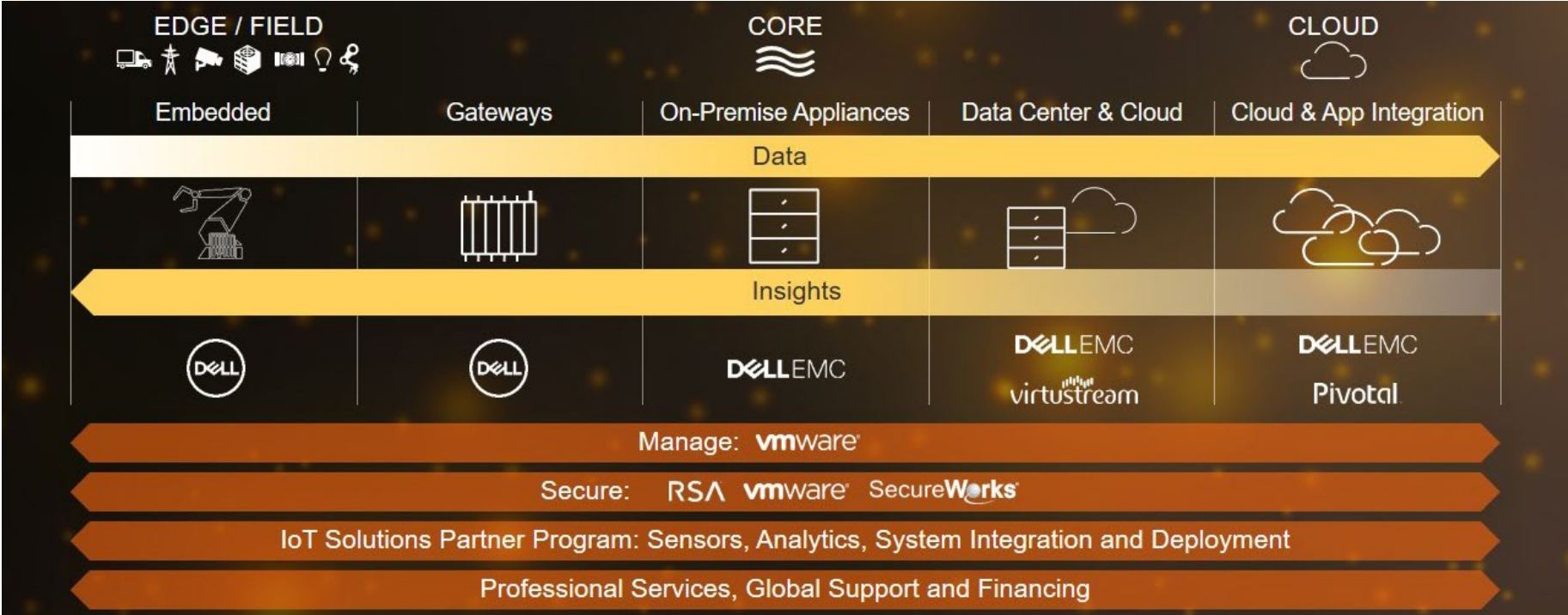
The reason that most SMBs will opt for turnkey IoT solutions is because it takes a lot of technology and industry expertise to build IoT solutions. But fortunately, IoT ecosystems are bringing developers, infrastructure providers and industry experts together to build pre-integrated IoT solutions that SMBs can deploy easily and benefit from quickly.

Dell EMC is collaborating with more than 70+ partners, working on over 630+ solutions to build pre-integrated IoT solutions that SMBs can use out of the box. This takes the burden of piecing

together the necessary building blocks—sensors, security, storage, edge computing, AI, ML, tech support and even financing—off the backs of SMBs. The approach brings all the necessary components together into consumable IoT solutions that go the last mile for SMBs.

This ecosystem can develop industry-specific IoT solutions that help SMBs to thrive and grow. Today, developers are working on solutions for even the smallest micro-verticals, in industries from agriculture to healthcare to transportation.

## PARTNERS CAN OFFER CHOICES ACROSS THE IoT CONTINUUM



## Automating Compliance, Reducing Costs and Improving Quality in the Food Industry

Proper refrigeration and climate cooling are essential to any food services company. Errors in this area can result in store downtime as well as product and financial losses—and can damage a company’s reputation.

ELM FieldSight LLC Café solves this problem by using a cloud-based IoT service that wirelessly monitors, controls and reports on these assets in real time to increase technician productivity, reduce unscheduled downtime, extend asset life and reduce energy costs. The service also guarantees its compliance monitoring with built-in indemnification and liability insurance against any damage in the event of solution failure.

ELM FieldSight LLC sells its integrated solutions as a subscription service. There are no up-front fees to start using the solution—giving customers an easy, affordable on-ramp for asset monitoring and management.



But behind the scenes, partnerships and the Dell EMC ecosystem make this possible. The service relies on Dell EMC gateways to gather, filter and standardize data in real time and transmit it to the cloud, and it automatically provides customers with relevant information via a unified cloud portal. Customers can also work with Dell Financial Services to finance the service.

The result? A service that helps companies in the food industry get up and running quickly to improve food quality and the customer experience—while also improving efficiency, reducing costs and ensuring compliance.



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## Managing Outdoor Security

From homes to campuses, security is a critical concern. Managing security in outdoor environments is particularly tricky for many reasons, including harsh weather conditions, lack of power, the need for mobility and the different types of security threats that must be monitored.

V5 Systems addresses this problem with its V5 Portable IoT Security Unit, one of the world's first wireless, multi-sensor solutions. The unit integrates visual, acoustic and chemical sensors; Dell Edge Gateway servers; advanced analytics; storage; and communications. V5 packages it all in a rugged enclosure that can be installed in less than an hour—with no trenching required.

V5's patented solar-powered smart power system powers the unit. It can run continually outdoors—without requiring multiple batteries, generators and the space they take up.

Businesses can deploy V5's solution to create a security zone anywhere—from a mountain to a forest. When a threat is detected, the unit sends real-time alerts to users' iOS or Android mobile devices so they can respond proactively to a potential threat, instead of only being able to react after the fact.

San Jose University, for example, uses the solution to monitor dorms and its stadium from vantage points outside the facilities. Multi-sensory capabilities, combined with V5's analytics library, enable the university to not only distinguish gunshots from other loud sounds with 95% accuracy, but also to triangulate where the shots are coming from.



“

**“We’ve created an IoT system that fits in your hands, has all the capabilities of a data center, and can be deployed in any outdoor environment.”**

– Mazin Bedwan,  
President and COO, V5 Systems

[Click Here](#): for more information

## Perspective

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With limitless potential use cases and ample evidence that early adopters are experiencing great outcomes, IoT could be the biggest internet-fueled game changer yet.

SMBs that design their operations for IoT can reap big intelligence, efficiency and performance gains—and ensure they can compete on a level playing field with larger companies that will certainly exploit these capabilities.

As with any new technology project, good planning drives successful outcomes. The following are some key questions to consider up front:

- ✔ What areas of my business could benefit the most from IoT?
- ✔ What business results do I want to achieve?
- ✔ What projects are realistic for my business?
- ✔ What internal and external resources will I need to ensure a successful deployment?

To avoid getting overwhelmed, break things down and take a practical approach:



Focus on a clearly defined business use case where access to accurate, real-time data and analysis can improve process and outcomes.



Pick a small, realistic test project that can be a stepping-stone to larger goals.



Identify specific goals and metrics—such as lower fuel consumption, anomaly detection or improved safety—that you want to achieve.



Look for pre-configured solutions specific to your use case or industry that pull all the key components—data collection, security, analytics, storage and management—together.



Choose vendors and partners that will take the time to work with you to understand your goals, reduce risk and help you gain benefits from the solution more quickly.

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