

COMCAST
BUSINESS

LEVERAGE THE INTERNET

TO OWN YOUR OPERATIONS



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When you tap into the cloud, artificial intelligence, and the Internet of Things, you can unlock your growth potential

THE INTERNET AS “BUSINESS COMMAND CENTRAL”

The Internet is no longer simply the virtual space that houses your website and social media pages. With the convergence of the cloud, artificial intelligence (AI), and the Internet of Things (IoT), it's becoming the place where you run your business.

Advances in each of these areas will make it possible for you to harness the Internet to streamline operations, improve energy efficiency, and optimize productivity. Additional developments in data collection and analysis can position your business to be as informed and competitive as possible.



We're moving toward a future in which you'll be able to use any Internet-connected device to aggregate and access input from your vendors, employees, customers, and even your machinery, systems, and equipment. Where the standard of agility today is the capacity to resolve problems in real time, you'll be equipped in a growing number of cases to resolve problems *before they happen*.

No, the Internet isn't powering time travel. But it is empowering owners of businesses of all sizes to gain a more granular understanding of what's happening across the organization and use that knowledge to run a more intelligent, nimble, and competitive operation. With the right know-how and sufficient bandwidth, you'll see the Internet become an engine for your company's performance, profitability, and long-term growth.

THE CLOUD COMPONENT

Like the Internet, the cloud has matured and gained potency as a business tool. You're already aware of its utility in remote data storage, access, and sharing. But the cloud's data collection capabilities now make it possible for you to access not only information you and your team have stored there, but knowledge pulled from your processes, production line, and products.

One of the areas in which the cloud excels is efficient analysis of big data, says Gordon Feller, founder of the San Francisco-based international nonprofit [Meeting of the Minds](#). The data is generated automatically and transmitted via sensors to the cloud, where the information can be stored and analyzed in real time.

"It can be very helpful to the highly efficient management of an organization, because then you're able to allocate the resources to fix the problem where it is," he says. And the information isn't limited to what is (or is not) working properly. The data can also help you to identify the conditions and circumstances under which equipment or people become overstressed, gain or lose efficiency, and generate higher or lower contributions to sales, income, product or service reliability, and customer satisfaction.

"That's where the analytics are so important," Feller says. "You're looking at the conditions. So, if I want to reduce my energy bill, I want to be able to look at the efficient use of the machine that consumes the energy. I want to look at the conditions that make it most efficient."



Feller notes that GE's **Predix** is pioneering this approach for industrial applications. Sensors installed in complex machines such as aircraft engines can send data to the cloud to provide real-time updates on their condition. The data makes it possible to predict the ideal maintenance schedule for that equipment and for individual



parts and components of the equipment. This, in turn, enables us to prevent those parts and components from going out of service. "We can catch it before it goes down, because we've seen the behavior across the whole spectrum of those devices," he says. "Machine

learning is all about pattern recognition. And this hints at where we're going to go with human applications.

INSIDE THE BOX

All this brings us to the business uses of the Internet of Things, or IoT. If you're familiar with the term mostly in relation to consumer products that you have trouble taking seriously, it's time to tune all that out and clue in to the business benefits that this technology can deliver.

"IoT as I define it is technology that allows us to integrate status and commands across devices so that we can monitor and control them better," says George Westerman, principal research scientist at the MIT Initiative on the Digital Economy and faculty director of the self-directed online course

THE EVOLUTION OF SOFTWARE-AS-A-SERVICE (OR "EVERYTHING-AS-A-SERVICE")

If you've upgraded to a new operating system in the past few years, you've probably run into subscriptions for software that you used to own outright—and you may have resisted the increased expense that these subscriptions represent. But **Software-as-a-Service (SaaS)** is becoming more than the software you used to install, maintain, and keep updated on your hard drive. Understanding the emerging capabilities of SaaS can help you to assess its value to your business.

"SaaS vendors will provide you with a way of tracking and monitoring use," Feller says. "They'll be able to identify patterns, alert you to customer behaviors, and so assist you in knowing how to deploy resources."

For example, cloud-based billing automation is evolving beyond improving billing accuracy and expediency to creating opportunities for improved customer interactions. "That's where the innovation is happening in billing automation," he says. "We are getting close to the point where the really small business with a network of customers can track the activity for that customer in a way that feeds right into the automated billing system. That's coming soon."

If you still find the monthly expense daunting, Feller has one more piece of advice: look for professional associations, business councils, or consortia whose members have access to those subscriptions at significantly reduced rates.

Internet of Things: Business Implications and Opportunities. “IoT allows sensors and other devices to talk to each other in a connected way that they could never do before. Its main value, at least for the first stages, is going to be in operations.”

On a small business scale, this will eventually mean something like allowing the owner of a local independent grocer to monitor each refrigerator and ensure that they’re consistently operating at the right temperature. And when something goes wrong, the data collected will reveal not only the problem, but the whole sequence of changes that led to it. This makes it possible not only to address the immediate problem, but to make adjustments that prevent it from happening again.

For a small manufacturer, it could mean addressing operational issues in the production line. “How could they be better if you knew what was happening each step of the way and knew about it faster? You could step in and fix things before they broke,” he says. “The IoT is bringing us close to being able to do that.

These developments are unfolding in tandem with the evolution of artificial intelligence and machine learning. As machines gain capacity to receive instructions and make decisions based on those

directions, they will become capable of, for example, improving operations efficiency. “Eventually, the human part of the process will dwindle as the machine becomes more intelligent,” Feller says. He cites examples of “small organizations with just a couple of machines” that could benefit: “a printing operation in an office, a laundry, a small-production manufacturing operation, or a craft beer brewery. Whatever somebody is doing with machines, those machines can be enabled, even if they’re older machines, which are now being adapted with new control systems, new intelligence systems, and new connectivity.”

That artificial intelligence in your equipment makes you more intelligent—more informed and more prepared to access and act on data and knowledge—as a business owner. Using the dashboard on your device, you can not only monitor performance, but make adjustments to refine performance. “The potential is endless,” Feller says. “This is going

And when something goes wrong, the data collected will reveal not only the problem, but the whole sequence of changes that led to it.





to revolutionize manufacturing and eventually make low-cost manufacturing at all levels less a dream and more a reality. Slowly, the machine learning technology is becoming affordable and accessible.”

Over time, this impact will extend to customer service as monitoring devices are installed in new products. An auto repair shop, for example, will be able to notify a customer whose tire is deflated and recommend that they stop by to fix the problem. “The bottom line is: this is going to change the whole landscape of small business. Suddenly, the tools that were reserved for the big multinational companies, like machine intelligence,

are going to be available at very low cost at the micro level.”

OUTSIDE THE BOX

Once you understand the power of all this technological muscle, you must decide how to flex it. That means not just how you’re going to access and interact with all this business intelligence, but how that’s going to change the way you interact with customers, vendors, and employees.

Can you increase productivity by allowing employees to telecommute part time? How do you convert new collaboration models into platforms for encouraging innovation and intrapreneurship—not just among employees, but with vendors and even customers? What structures can you create to identify and cultivate leadership talent, invite input and ideas from throughout the organization, and engage your entire team—anywhere they’re located—in uncovering and pursuing new opportunities for growth?

“It’s really beneficial to have cloud-based tools that everybody can tap, like a common schedul-

IOT TRENDS TO WATCH IN 2018

As IoT technology, markets, and awareness mature, George Westerman is watching several trends.

The first is increased savvy about what actually constitutes IoT, as opposed to what has adopted the name for use as a marketing ploy.

Conversely, he expects that solutions that qualify as IoT but aren’t labeled that way now will be recognized as part of this technology advance. Look for increased awareness of the IoT implications of “major operational improvements integrating information or linking closer to customers through knowing what their phones are doing,” he says. “That’s happening. It’s not being called IoT, but it’s happening, and we can learn from that.”

Finally, he’s tracking emerging technology standards that are simplifying the process of linking devices. “It’s becoming easier to develop IoT solutions that are going to stay useful and stay improveable over time.”



ing toolset or a common project management toolset,” Feller says. “That’s not just because I can access the tool from anywhere, anytime, on any network, via any device. I can also tap into the knowledge that sits in my organization.” He notes that companies traditionally lost shared, accumulated knowledge each time an employee took a new job or retired, but “now I can pool and tap that knowledge to take advantage of all the effort that’s preceded me.”

The result, he adds, is that companies become capable of “going past being super productive and super efficient to finding ways of getting more creative and maybe even creating breakthroughs.”

At the same time, companies are going to have to become smart about how they use the data they collect in interactions with customers. Privacy is a concern, “and you’ve got to figure out how to manage through that creepiness factor,” Westerman says. The message you communicate must focus on service offered and benefits delivered to customers.

Building the bandwidth necessary to access the cloud and tap into all the intelligence being generated by and about your company, you can become a smarter, more strategic, and more successful business owner. Many of these solutions are still moving toward accessibility and applicability at a scale that makes sense for small business. But by gaining knowledge of their capabilities now, you establish the foundation for ensuring that your company has the intelligence it needs to compete and to ensure that its competitiveness and capabilities can scale for the long term.

CAMPING OUT: PLATFORMS THAT EMBRACE TEAMS

You’re familiar with apps that facilitate document sharing, team messaging, collaboration, and project management. But have you checked out some of the solutions that bring all these elements together? Take a look at this list of team platforms that may be just what you need to spark a more productive 2018:

- **Airtable** calls itself “part spreadsheet, part database” and promises to “organize anything, with anyone, from anywhere.”
- **Front** offers a “multi-channel inbox” and says its solution “powers better customer conversations.”
- **Hive** offers flexible project views, file sharing, action and project templates, and more than 100 tool integrations.
- **Huddle** facilitates collaboration among coworkers and clients. Its focus is on efficient and secure interaction.
- **Liquid Planner** approaches projects as “living, evolving constructs” that require a “responsive approach to project management.”

RESOURCE GUIDE

These online tools can help you convert artificial intelligence to real results

Cloud, AI, and IoT technologies represent a brave—and for small business owners, intimidating—new world. But it's essential to explore these emerging advances and learn to incorporate them within your strategy for competing successfully in today's business environment. These online references can help you to understand and make the most of emerging technologies and their potential to support your company's long-term growth.

HARVARD BUSINESS REVIEW

- [Webinar: Leveraging IoT: Beyond Products to Solutions](#)
- [Using IoT Data to Understand How Your Products Perform](#)
- [Success with the Internet of Things Requires More Than Chasing the Cool Factor](#)
- [The Business of Artificial Intelligence](#)
- [How Cloud Computing is Changing Management](#)

PC MAGAZINE

- [Small Businesses That Haven't Invested in AI Probably Haven't Done Enough Research](#)

TECH EMERGENCE

- [The State of Machine Learning and Predictive Analytics for Small Business](#)