What Is IoT?

IoT connects “smart” devices to the Internet and to each other. Gartner predicts that 6.4 billion devices will be connected to the Internet by the end of this year, and Cisco forecasts 50 billion devices will be online by 2020. Internet-connected devices can include everything from cellphones and wearables to kitchen appliances and home automation systems. IoT is sometimes called the “Internet of Everything” because we’ve just begun to scratch the surface of adding connectivity and intelligence to products, systems and processes.

With IoT, any device can seamlessly collect, share and analyze real-time data. From everyday uses like smart fridges that notify users when they are out of milk to smart thermostats that allow homeowners to turn on heating remotely, there are a slew of smart home and office applications of IoT. On a broader scale, IoT can be applied to larger networks, streamlining supply chains or automating entire manufacturing facilities. IoT can also be used to create smart cities that can improve efficiency for things like energy use or traffic networks. So far, consumers have been the primary beneficiary of IoT innovation, but the opportunity for business and the public sector is arguably far greater. Labeled as “the next Industrial Revolution,” IoT will fundamentally change how we work and live.

What Opportunities Does IoT Offer For Tech?

IoT offers tremendous opportunities for the tech industry, creating demand for new components, products and services. Some of the areas for growth and innovation include:

- **Data analysis** – One of the biggest IoT opportunities lies in software—and more specifically, data aggregation and analysis. The global IoT analytics market is expected to reach $16.35 billion by 2020, according to research from Markets and Markets. Helping businesses monetize data from IoT and maximize its value will be a significant—and lucrative—undertaking, requiring better monitoring and diagnostics tools, more storage space and more advanced analytics. Companies that create smarter data collection and management capabilities for the millions of data points that IoT fosters will be at the cutting edge of data analytics across all industries.

- **Cybersecurity** – Arguably the biggest risk for device manufacturers, vulnerabilities in IoT have opened up a host of new cybersecurity challenges—and a new target for cybersecurity solutions providers. According to the MPI Internet of Things Study, sponsored by BDO, 44 percent of manufacturers do not have or are unaware as to whether or not they have the ability to detect and identify unauthorized Internet-connected devices. In IoT, the data is often transferred autonomously, without additional user input. Without the proper security protocols, IoT can inadvertently offer a window into users’ most personal data. The breadth of potential entry points for attack is much wider, making it harder to track down the site of infection. The demand for cyber solutions leveraging machine learning techniques and predictive modeling will increase as IoT cybersecurity issues come to the fore.

- **Sensor technologies** – Sensors are a component embedded in virtually every connected device and are expected to penetrate all categories of products within IoT. Detecting sensory changes is what enables objects to provide intelligence on the surrounding environment. The rise of IoT—and industrial data in particular—creates opportunity for sensor makers to innovate new sensor types and ramp up production. The $85 billion sensor market is expected to grow to more than $115 billion by 2019 with a 7.3 percent compound annual growth rate.

- **Connectivity** – In IoT, all of the devices in a single household or office—which can number into the hundreds—are connected to a network. The existing BlueTooth or Wi-Fi solutions may not be able to meet requirements of a smart home or office given their power and network limitations. There will be a need for connectivity solutions with larger data capacity and the ability to manage more IP addresses for many devices.

- **Data Storage** – How data should be stored and processed in IoT is a matter of ongoing debate and innovation. Endpoint devices that connect to IoT require chips that allow for greater data storage and processing at the edge of the network—and the trend is for those chips to become smaller with lower power consumption and even higher bandwidth. In addition, more ingress data flowing into data centers is creating added storage demands—which may drive a sea of...
change in IT management from centralization to distribution, with organizations leveraging several mini-data centers. That doesn’t mean the end of the cloud; for industrial IoT applications where real-time speed may be less critical, cloud computing may be better suited in terms of cost and scalability.

Insights

The implications—and applications—for IoT are vast and span across many different industries—from retail, manufacturing and healthcare to agriculture, automotive and energy. As IoT evolves and consumer and business use becomes more widespread, so will the need for technology-driven solutions that support IoT devices. Tech companies that embrace IoT stand to seize the biggest opportunity since the advent of the smartphone.