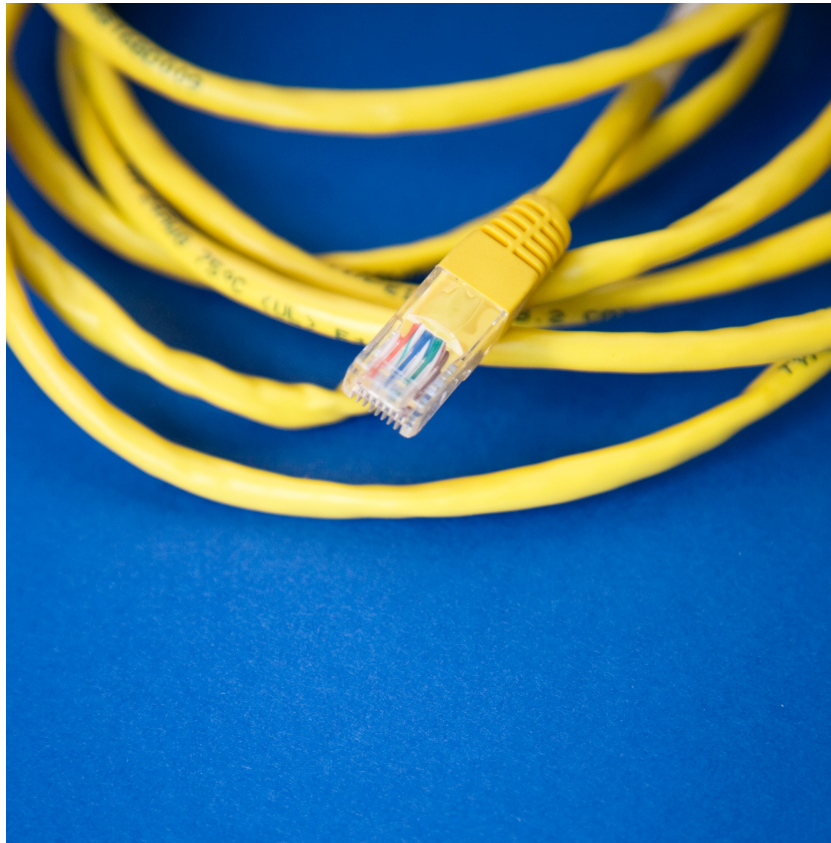


Policy Brief:

The Internet of Things



December 2018

Policy Update: Internet of Things (IoT)

What is the IoT?

The Internet of Things (IoT) is a term that means just that, things connected to the Internet. Any device with an on-and-off switch that is connected to the Internet is a part of the IoT.¹ Refrigerators, watches, headphones, coffeemakers, lamps, door locks, and much more, all connected by the Internet, communicating and sharing data in an attempt to make your life easier, more efficient, and more cost effective. In short, the IoT fulfills the promise the 20th Century made about what life could be like in the future.

When will the IoT arrive?

It's largely already here, but not nearly as impactful as it will be in the near future. Currently, there are about 6.4 billion connected devices worldwide.² But by 2020, estimates suggest that 21 billion devices will be Internet connected.³

Why is the IoT taking off?

Simply, smarter and more connected devices will make life and work easier. The IoT will streamline daily activities and reduce the drudgeries associated with daily of life. Home and work operations will



¹ Morgan, Jacob. *A Simple Explanation of 'The Internet of Things,'* <https://www.forbes.com/sites/jacobmorgan/2014/05/13/simple-explanation-internet-things-that-anyone-can-understand/#223221e81d09>, (May 13, 2014).

² Nunez, Michael. *What is 5G and How Will It Make My Life Better?*, <https://gizmodo.com/what-is-5g-and-how-will-it-make-my-life-better-1760847799>, (February 24, 2016).

³ Ibid.

become more efficient as devices will know how to optimize energy and time usage while keeping its user happy. Additionally, technology costs are going down, more devices are being created with Wi-Fi capabilities, and broadband Internet is becoming more widely available than ever before.⁴ Plus, early deployment of ultra-fast 5G wireless Internet networks will help accommodate billions of additional devices without stressing already subscribed and slower network.⁵ In short, we are on the precipice of an IoT boom.

How is the IoT currently being used?

Today, the IoT creates a network of smart devices that speak to each other (and to you) to coordinate their activities in the hopes of making your life and work easier, more efficient, and cost effective.⁶ By connecting these devices to each other and creating a smart network, it becomes possible to gather information, analyze it, and create an action to help a user with a

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particular task.⁷ The following are but a few examples of the tasks being carried out by the IoT today:

Home and Office: Smart thermostats learn the users' schedules and program themselves to heat and cool homes and offices to optimal temperatures at optimal times. They can even open and shut blinds to maximize natural solar heating. Homes and offices can also be operated remotely allowing the occupant to control security, climate, appliance, lighting, and home theatre equipment from a different room, or a different country.⁸

Cities: Stoplights are embedded with sensors that can adjust traffic lights according to where cars are and the time of day to minimize traffic and stoplight idling. Solar-powered garbage cans can crush

⁴ See Morgan, *supra*.

⁵ Ibid.

⁶ Meola, Andrew. *What is the Internet of Things (IoT)?*, <http://www.businessinsider.com/what-is-the-internet-of-things-definition-2016-8>, (December 19, 2016).

⁷ Burgess, Matt. *What is the Internet of Things?*, <http://www.wired.co.uk/article/internet-of-things-what-is-explained-iot>, (April 21, 2017).

⁸ Scott, Alec. *8 ways the Internet of things will change the way we live and work*, <https://beta.theglobeandmail.com/report-on-business/rob-magazine/the-future-is-smart/article24586994/?ref=http://www.theglobeandmail.com&>, (accessed September 26, 2017); Rouse, Margaret. *Smart home or building*, <http://internetofthingsagenda.techtarget.com/definition/smart-home-or-building>, (accessed September 26, 2017).

waste and send a message to a dispatcher requesting pickup when they're full.⁹

Manufacturing: Manufacturers are using technology to pinpoint bottlenecks on the factory floor and divert resources accordingly to optimize the production process so as not to waste time.¹⁰

Vehicles: Some vehicles are equipped with autopilot that can direct a car through varying degrees of traffic, can parallel park, and can read posted speed limit signs to warn drivers to slow down.¹¹

Health Care: The Internet of Medical Things includes remote patient monitoring and personal devices like smart watches, which measure heart rate, sleep patterns, diet, exercise, and then beam that data to mobile apps. These apps process the data and offer suggestions to help you make healthy life choices.¹²

Energy: Wind turbines can sense wind direction and can notify other turbines on the farm which angle to position themselves to maximize energy production.¹³

Agriculture: Smart machines can plow, sow, reap, and collect large swaths of data about air and soil temperatures, moisture, wind speed, humidity, solar radiation, and rainfall and adjust the farming process accordingly.¹⁴

What does the future of IoT look like?

The future of IoT will come in the form of greater connectivity. More and more devices will go online and more and more devices will speak to each other, coordinate, and become increasingly proactive.¹⁵ Your alarm clock will wake you up at 7 a.m. and will tell your coffeemaker to start brewing coffee for you strong, the way you like it when you have a big meeting in the morning, which it knows because your digital calendar told it so.

The calendar also told your car to be ready at 8 a.m. and have the heater running, because the weather app said it would be chilly. Unfortunately, you were running late.

⁹ See Scott, *supra*.

¹⁰ Ibid.

¹¹ Ibid.

¹² Ibid; Rouse, Margaret. *IoMT (Internet of Medical Things) or healthcare IoT*, <http://internetofthingsagenda.techtarget.com/definition/IoMT-Internet-of-Medical-Things>, (accessed September 26, 2017).

¹³ See Scott, *supra*.

¹⁴ Ibid.

¹⁵ See Morgan, *supra*.

But luckily, your car texted the person with whom you were meeting notifying her of that. Once at work, your wearable devices will tell you when and where in the office you were most productive and send the info to your day planner which will create a schedule to help you further optimize your time and energy.

We hear a lot about the Internet of Things. That's because it's huge, and it's coming to a fridge near you.



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