

# What is the internet of things?

Google searches have been filled with questions about the internet of things. What is it and why does it matter? Is it safe? Is it even real? Here are some answers

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Wednesday 6 May 2015 04.51 EDT

**A**mong its many other cultural and economic assets, Google is accumulating a rather comprehensive record of what is troubling us, from asking the search engine to diagnose our disease symptoms to whether we will ever find true love. It seems only natural, then, to turn to Google to decrypt the latest piece of technical jargon, “the internet of things”.

It is a term that internet users have been peppering the search engine with questions about. But what does it mean for real life? We’ve taken the most commonly asked questions about the internet of things, and answered them using a real human being.

## **What is the internet of things (and why does it matter)?**

The internet of things (or as it’s also known, IoT) isn’t new: tech companies and pundits have been discussing the idea for decades, and the first internet-connected toaster was unveiled at a conference in 1989.

At its core, IoT is simple: it’s about connecting devices over the internet, letting them talk to us, applications, and each other. The popular, if silly, example is the smart fridge: what if your fridge could tell you it was out of milk, texting you if its internal cameras saw there was none left, or that the carton was past its use-by date?

Where it’s most common, in Britain at least, is home heating and energy use - partially because the government is pushing energy companies to roll out smart meters (although it has been questioned whether it can be delivered on schedule). They have clever functions that let you turn on heating remotely, set it to turn down the temperature if it’s a sunny day, or even turn off when there’s no-one home. Some can tell the latter with motion-sensing cameras, or simply by seeing that your smartphone (and therefore you) has left the premises.

IoT is more than smart homes and connected appliances, however. It scales up to include smart cities - think of connected traffic signals that monitor utility use, or smart bins that signal when they need to be emptied - and industry, with connected sensors for everything from tracking parts to monitoring crops.

Why does it matter? There’s a reason the government is encouraging energy companies to hand you a smart meter: all that data and automated use is more efficient, meaning we use less energy. Many areas of IoT show such benefits, though some smart gadgets are more about whizz-bang effects than efficiency, which may well be why we’re seeing more smart heating than smart fridges in the UK.

## **Is it safe? Can the internet of things be secured?**

Everything new and shiny has downsides, and security and privacy are the biggest challenges for IoT. All these devices and systems collect a lot of personal data about people - that smart meter knows when you're home and what electronics you use when you're there - and it's shared with other devices and held in databases by companies.

Security experts argue that not enough is being done to build security and privacy into IoT at these early stages, and to prove their point have hacked a host of devices, from connected baby monitors to automated lighting and smart fridges, as well as city wide systems such as traffic signals. Hackers haven't, for the most part, put much attention to IoT; there's likely not enough people using connected appliances for an attack against them to be worth the effort, but as ever, as soon as there's a financial benefit to hacking smart homes, there will be a cyber criminal working away at it.

So the short answer is yes, IoT is relatively safe: you're not likely to face serious loss or damage because of your smart meter, any more than your home PC, at least. However, there's no guarantee, and so far not enough is being done to ensure IoT isn't the next big hacking target.

## **How will the internet of things affect business and work?**

This all depends on your industry: manufacturing is perhaps the furthest ahead in terms of IoT, as it's useful for organising tools, machines and people, and tracking where they are. Farmers have also been turning to connected sensors to monitor both crops and cattle, in the hopes of boosting production, efficiency and tracking the health of their herds.

The examples are endless, and all we can predict is that connected devices will likely creep into most businesses, just the way computers and the web have. When the efficiencies are with tools or plants, it's easy to appreciate the potential benefit, but when it's office workers who are being squeezed for more productivity, it could take on a bit of a dystopian shade: imagine your security access card being used to track where you are in the building, so your boss can tot up how much time you're spending in the kitchen making tea.

On the flip side, a smart tea maker that knows just when you're in need of a cuppa could be very handy indeed.

## **What does the internet of things mean for healthcare?**

Smart pills and connected monitoring patches are already available, highlighting the life-saving potential of IoT, and many people are already strapping smartwatches or fitness bands to their wrists to track their steps or heartbeat while on a run.

There's a host of clever connected health ideas: Intel made a smart band that tracks how much patients with Parkinsons shake, collecting more accurate data than with paper and pen; Sonamba monitors daily activities of senior or ill people, to watch for dangerous anomalies; and people with heart disease can use AliveCore to detect abnormal heart rhythms.

Healthcare is one area where more data has the potential to save lives, by preventing disease, monitoring it and by analysing it to create new treatments. However, our health is also one of the most sensitive areas of our lives, so privacy and security will need a bit more preventative medicine first.

## **Is the internet of things real?**

This is perhaps the best query being Googled about IoT: is it real?

Surprisingly, it's tough to answer. Technology is full of marketing and hype - it's often difficult to decide early on whether an innovation is truly ground-breaking or not. After all, many tech pundits mocked the first iPhone.

But the internet of things is one of those wider ideas that isn't dependent on a single project or product. Smart fridges may well be the appliance of the future, or could fall by the wayside as too much tech for too little gain, but the idea of connected sensors and smart devices making decisions without our input will continue.

A decade from now, everything could be connected or perhaps only bits and pieces with specific benefits, such as smart meters; and we may call it IoT, smart devices or not call it anything at all, the way smartphones have simply become phones.

No matter where it is or what we call it, IoT is real - but what it will look like in the future is something even Google can't answer.

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