BT Group

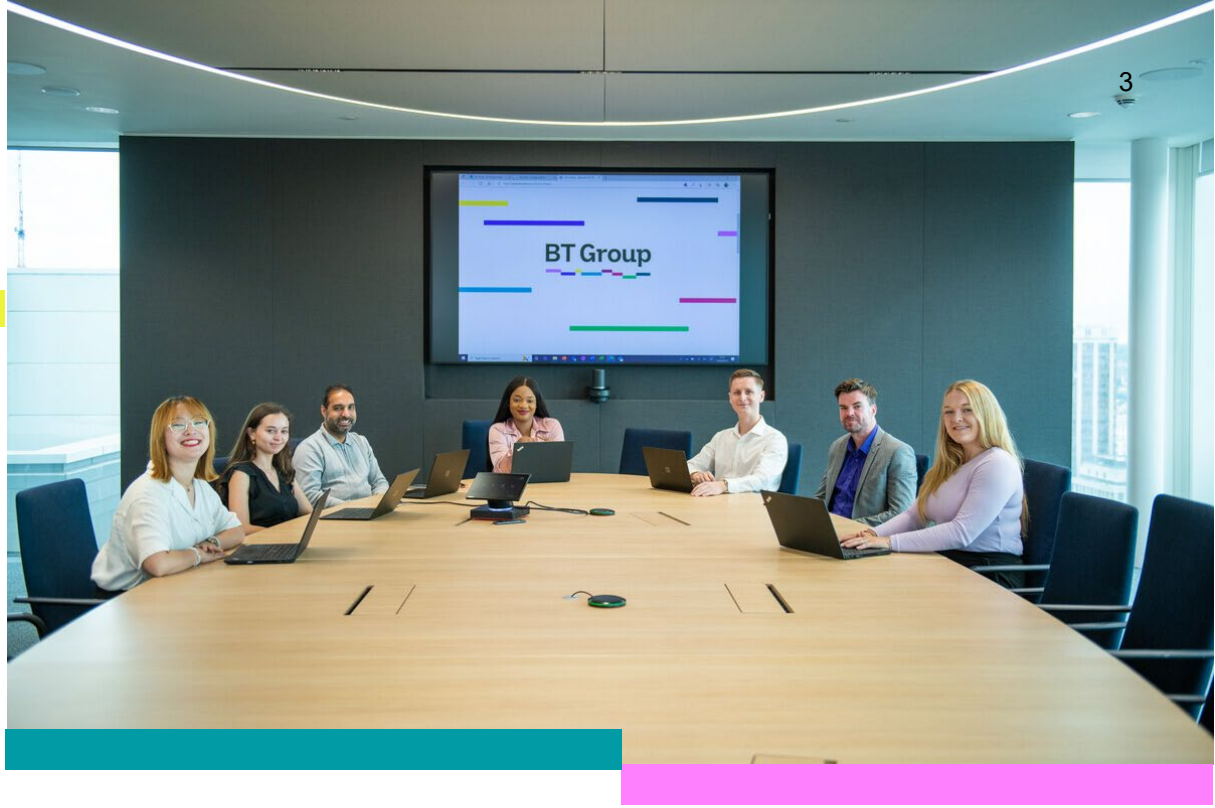
The Internet of Things (IoT)

The IoT: a world of connectivity

In today's technological world, we are more **connected** than ever – in our **homes**, at **school** and across the **workplace**. By allowing **devices** to 'talk to each other' through the **internet**, we are able to **share information**, **operate machines** and **complete everyday tasks** even when we're towns, countries or even continents apart.

This is the **Internet of Things**, or **IoT** for short.

The **IoT refers to a network of devices that are connected to the internet.**



Across many different industries, businesses like BT Group are using the IoT to devise innovative ways to connect businesses, customers and people all over the world. This can improve the way people work, make our day-to-day lives easier, and help companies provide better services to their customers.

Big Thinking...

In this module, we will consider:

*What are the **risks and benefits** of the IoT?*

*Should smart **devices** be **allowed to make decisions** for us without our **consent**?*

Module overview

01

The IoT: a world of connectivity

Learn about the IoT and how it works through a series of interactive activities and roleplay.

02

The big IoT debate

Debate the possible ethical considerations of using the IoT in our day-to-day lives.

03

Product design challenge

Work in groups to come up with a new IoT product idea, using a 3D modelling programme to create visuals of your design.

04

Presentations and reflections

Module objectives

Today's lesson is one part of a module of four lessons.

By the end of the module, you will be able to demonstrate different technical and human skills that will help you succeed in a future transformed by technology.

Module objectives

This module will focus on the following skills:

- Technical skills: using and managing digital devices, platforms and apps
- Human skills: critical-thinking and problem solving

Lesson objectives

By the end of this lesson, you will be able to:

- Explain how the IoT collects, uses and stores our data
- Use critical thinking skills to consider the benefits and risks of IoT in terms of our privacy and security

The IoT: a risky business?

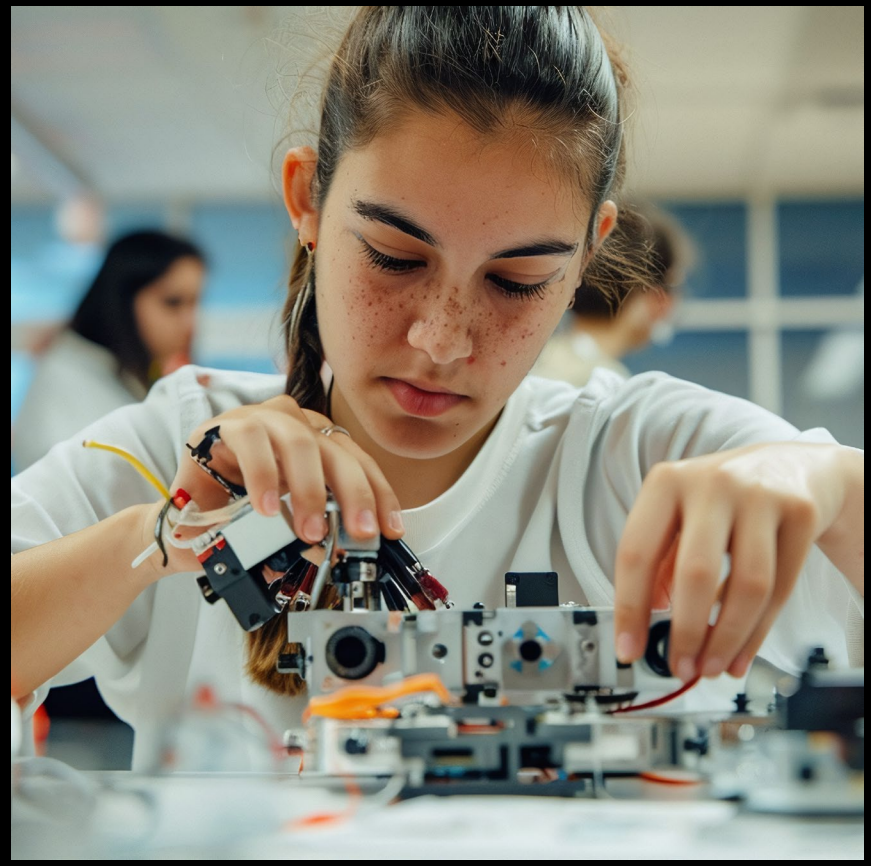
The IoT and data

- IoT systems collect data from sensors across different devices, in our homes, via our phones, etc.
- IoT devices use the internet to connect with each other and share this data
- APIs are used to instruct databases, servers and other data sources on what information is required
- IoT technology can make our lives easier by:
  - Automating processes so that we don’t have to worry about doing them manually
  - Helping us to efficiently access and share information

Reflect...

When has your data been collected by a company's organisation, website or app?

- *How was your data requested?*
- *What permissions did you give?*
- *Why do you think the company wanted this data?*
- *What are the possible risks?*



IoT and the dangers of data-sharing

Data disasters: match-making task

Read the scenarios on your ‘Data disasters’ and decide which topic they are describing from the following list:

Third party sellers

This is a network of private computers that have been infected by malicious software. They can be controlled by cybercriminals to spread malware and steal data without requiring human interaction. This means they can be extremely damaging to companies with large databases of personal information which are connected via the internet.

Data breaches

Some companies will sell personal data to other organisations to make more profit. Victims may then be exposed to more fraudulent activity if the data is sold on to cybercriminals looking for scam opportunities. The data’s original owners may not know for many years, or ever, that their personal information is being used by other businesses.

Botnets

Cybercriminals may intercept communications between personal IoT devices or target businesses’ servers to access company, employee and customer information. They will look to take advantage of private information such as bank details or login credentials.

In their shoes

Put yourself in the role of these different company stakeholders:

An investor

Someone who puts funding into the company so that they can in turn make money from the company's success

An employee

Someone who works for and receives a salary from the company

A customer

Someone who uses the services or products provided by the company

A supplier

Someone who provides the materials, information or services to make sure the company can keep running, making products and/or offering its services

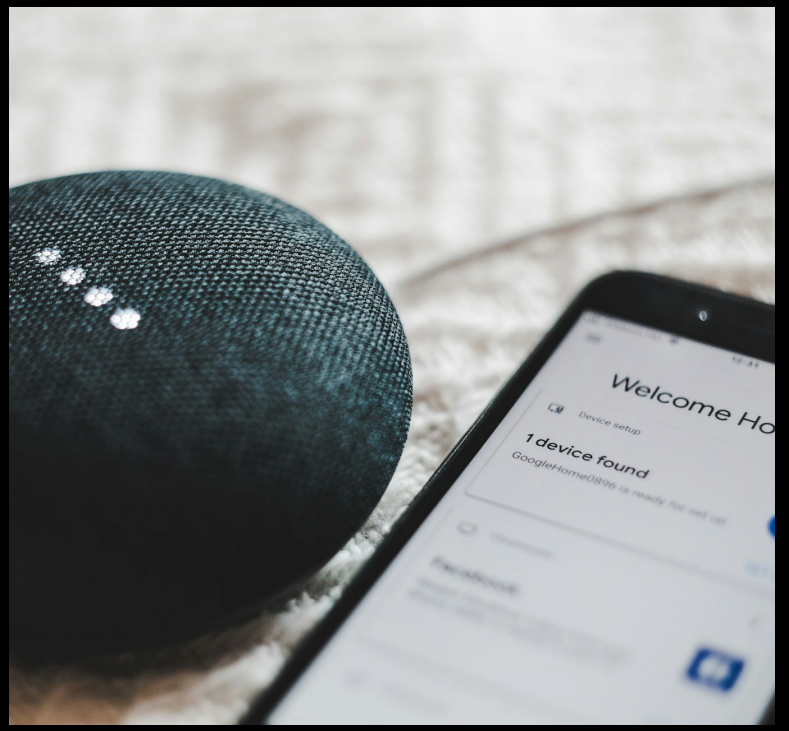
In their shoes

Consider these questions:

- What would their biggest concerns or priorities be?
- What are the potential consequences for them if the company's IoT system experiences a data breach?

Discuss...

What can we do to protect our personal data and privacy when using IoT systems to share information?



Real risks of the IoT

Real-world IoT stories

Read the real-world scenario you've been given and answer the following:

- What were the possible consequences?
- Why is consent so important in these situations?
- What steps could be taken in to avoid the same thing happening in the future?

Recap

What have you learnt today?

- What are some of the potential risks of using IoT products?
- Why is it so important that products are designed with security and safety in mind?
- Is it possible to use IoT products whilst maintaining our personal data, privacy and decision-making?