

MASSIVE MACHINE-TYPE COMMUNICATIONS AND THE INTERNET OF THINGS WITH DR ZILONG LIU

TALKING POINTS

1. Zilong uses an analogy of cars to describe an air interface. What is an air interface and why is it important? (See *Introduction*)
2. What is the Internet of Things? (See *Introduction and The Internet of Things*)
3. What current uses do we have for the Internet of Things? (See *The Internet of Things*)
4. How will the Internet of Things improve our lives? (See *Imagine this*). Can you think of any other potential future scenarios?
5. What is the difference between 4G and 5G? (See *The Fifth Generation*)
6. Why are massive machine-type communications called “massive”? (See *Massive Machine-Type Communications*)
7. Our wireless system currently relies on the orthogonal multiple access (OMA) principle. What is this principle and how does it differ to NOMA? (See *How does our current wireless system work?* and *So, how can the issue of overcrowded frequencies be solved?~*)
8. How might 5G and mMTC revolutionise the Internet of Things? (See *Massive Machine-Type Communications*)

ACTIVITIES FOR HOME OR IN THE CLASSROOM

Look around your house or classroom. How many devices can you find that are part of the Internet of Things? This is any machine that communicates with another machine without you having to do anything. Depending on what systems you have, the suggestions below may or may not apply – think about each one:

- How is the room’s temperature maintained?
- How do the apps on your phone or computer work?
- What security and surveillance measures are in/around the room?
- How do the lights work?
- Do speakers or headphones have wires?
- How do voice command devices work?
- How is the air in the room kept fresh?

MORE RESOURCES

- Check out IBM Think Academy’s video, *How It Works: Internet of Things*, for a clear animated explanation about this growing trend in wireless technology and where it might lead us: <https://www.youtube.com/watch?v=QSIPNhOiMoE&t=17s>
- The IoTUK Nation Database provides a snapshot of the current Internet of Things in the UK – what sectors are using it, how they’ve grown, and in what areas: <https://odileeds.org/projects/iot/>
- Innovate UK, the UK’s government innovation agency, has a blog that often talks about the Internet of Things and massive machine-type communications. Topics range from cybersecurity, to energy production, to smart cities: <https://innovateuk.blog.gov.uk/tag/internet-of-things/>