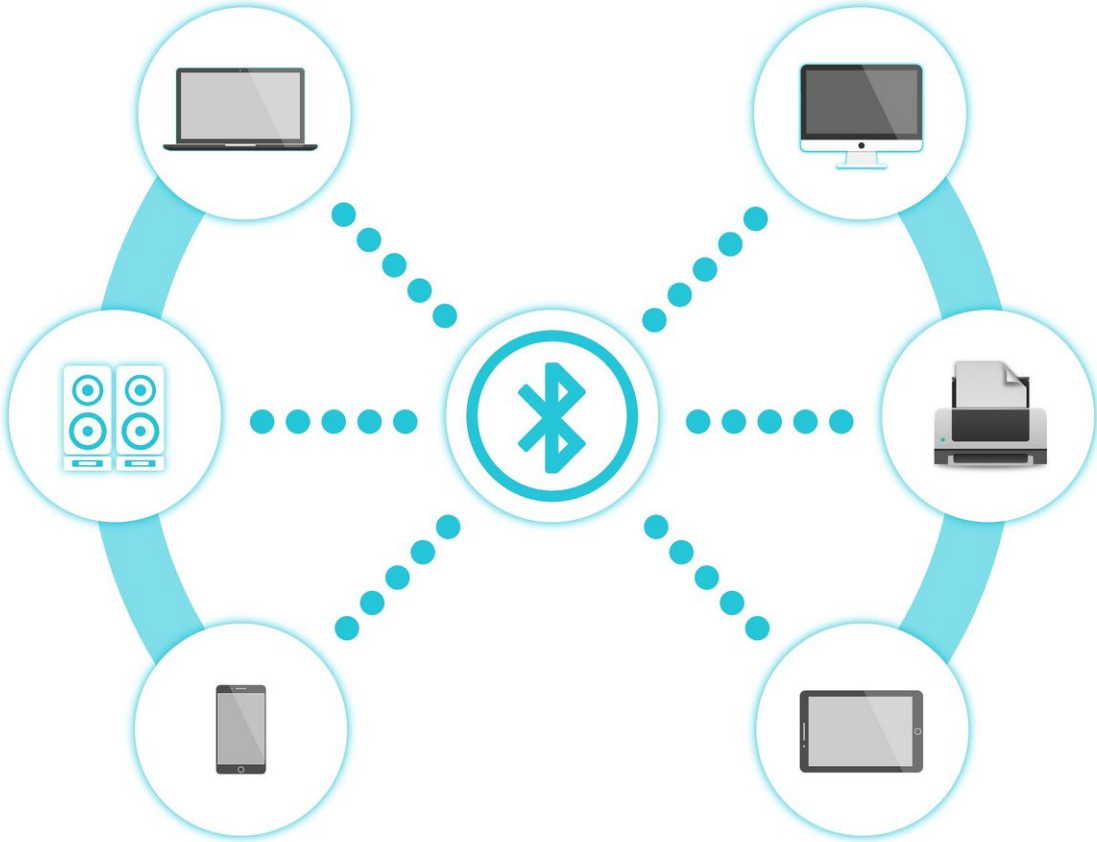


Long in the Bluetooth: Scientists develop a more efficient way to transmit data between our devices

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University of Sussex researchers have developed a more energy-efficient alternative to transmit data that could potentially replace Bluetooth in mobile phones and other tech devices. With more and more of us owning smartphones and wearable tech, researchers at the University of Sussex [have found a more efficient way of connecting our devices and improving battery life](#). Applied to wearable devices, it could even see us unlocking doors by touch or exchanging phone numbers by shaking hands.

Professor Robert Prance and Professor Daniel Roggen of the University of Sussex have developed the use of electric waves, rather than electromagnetic waves, for a low-power way to transmit data at close range while maintaining the high throughput needed for multimedia applications.

Bluetooth, Wifi, and 5G currently rely on electromagnetic modulation, a form of wireless technology that was developed over 125 years ago. In the late 19th Century, the focus was on transmitting data over long distances using [electromagnetic waves](#). By contrast, electric field modulation uses short-range electric waves, which consume much less power than Bluetooth.

As we tend to be in [close proximity](#) to our devices, electric field modulation offers a proven, more efficient method of connecting our devices, enabling longer-lasting [battery life](#) when streaming music to headphones, taking calls, using fitness trackers, or interacting with smart home tech.

The development could advance how we use tech in our day-to-day lives and evolve a wide range of futuristic applications, too. For example, a bracelet using this technology could enable phone numbers to be exchanged simply by shaking hands, or a door could be unlocked just by touching the handle.

Daniel Roggen, Professor of Engineering and Design at the University of Sussex, explains, "We no longer need to rely on electromagnetic modulation, which is inherently battery-hungry. We can improve the battery life of wearable technology and home assistants, for example, by using electric field modulation instead of Bluetooth. This solution will not only make our lives much more efficient, but it also opens novel opportunities to interact with devices in smart homes."

"The technology is also low cost, meaning it could be rolled out to society quickly and easily. If this were mass-produced, the solution can be miniaturized to a [single chip](#) and cost just a few pence per device, meaning that it could be used in all devices in the not-too-distant future."

The research was published as part of the *2023 IEEE International Conference on Pervasive Computing and Communications (PerCom)*.

More information: Robert Cobden et al, Characterisation of Wearable Electric-Field Communication Link for BAN Multimedia Applications, *2023 IEEE International Conference on Pervasive Computing and Communications (PerCom)* (2023). [DOI: 10.1109/PERCOM56429.2023.10099133](#)

Provided by University of Sussex

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