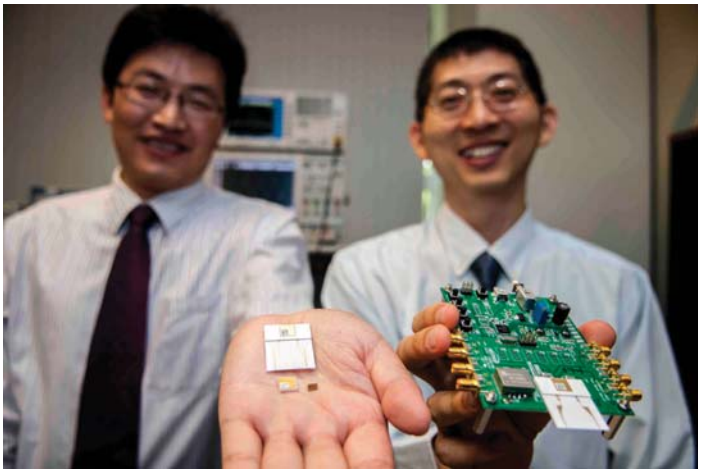

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01 (L to R) Dr Ma Kaixue and Prof Yeo Kiat Seng hold different variations of the VIRTUS Microchip
02 The VIRTUS Microchip enables mobile devices like smartphones and laptops to wirelessly transfer data at phenomenal speeds
03 The VIRTUS Microchip enables smartphones to stream HD videos on projectors in real time without the use of cables

VIRTUS Chipset races ahead 1,000x faster than Bluetooth

In September 1958, the electronics industry was on the cusp of change. An inventor by the name of Jack Kilby had developed the first-ever integrated circuit. The earliest version of the integrated circuit was just an oscilloscope attached to a small ribbon of germanium. But it did the trick. Kilby passed in a current and a sine wave registered. And so the world of electronics entered a new age.

Fast forward a few decades—a new breakthrough will once again enter the annals of history, with credit going to the scientists at NTU and A*STAR Institute for Infocomm Research (I²R). Led by Principal Investigator Prof Yeo Kiat Seng, NTU, the research team has successfully revolutionised integrated circuits and developed a microchip that can transmit large packets of data at ultra-high speeds.

The product: the VIRTUS chipset, which is a low-power 60 Gigahertz (GHz) solution. It comprises three components: an antenna, a radio-frequency transceiver—conceived by NTU—and a baseband processor, which is the brainchild of I²R.

The antenna is connected to the transceiver. The transceiver will filter and amplify the signals, following which it passes them to the baseband processor.

The processor consists of non-linear analogue signal processing, unique digital parallel processing and decoder architecture, all of which enable the chipset to operate while consuming little power.

This salient feature means it can be used in gadgets such as smartphones and tablets. Data can now also be transmitted between these gadgets and media devices such as projectors and TVs without the need for cables.

“The demand for ultra high-speed wireless connectivity has fuelled the need for faster data transfer rates. Unfortunately, current technologies are unable to meet these stringent demands,” Prof Yeo opines.

That is set to change with the advent of the VIRTUS chipset. With two gigabits per second of information, it is thus able to transmit data 1,000 times faster than Bluetooth. In other words, what takes Bluetooth 8.5 hours to transmit, this microchip takes just half a minute to transfer a two-hour movie file of eight gigabytes.

To date, the VIRTUS chipset has garnered 16 international patents. This nifty semiconductor has also appeared in 51 international journals and conference papers.

“The success of this project would not be possible without the right strategic partnerships and excellent team spirit. They are critical to the development of 60GHz technologies, solutions and applications. Moving forward, the team will be accelerating the pace of innovation, both technically and in terms of product marketing and integration as well as commercialisation strategies. We will be creating many exciting devices targeting a broad range of new applications, including system-on-chip for future smartphones, storage, tablets and computers,” Prof Yeo adds.

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