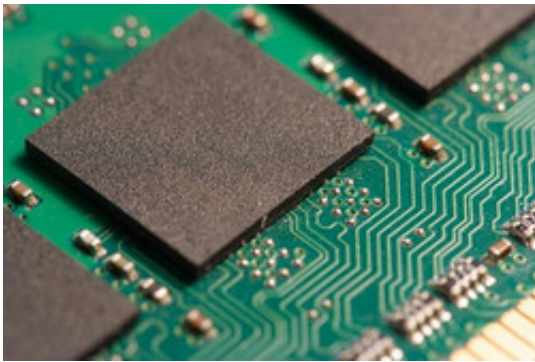# New photonic chips could transform how online data is sent and stored

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A key potential end user of these chips, developed through the EU-funded IRIS project, will be data centre operators. Data centres house computer systems and associated components such as telecommunications and storage systems that ensure the smooth running of businesses. Companies increasingly rely on their information systems to run operations.

Data centre networks need to be scalable and efficient in order to connect tens or even hundreds of thousands of servers. The growth of cloud computing – where data is stored and processed in third-party data centres – has also increased demand for more efficient storage space. A key constraint on data centre capacity however has been the limits of the interconnection network, and it is this constraint that the IRIS project

has sought to address.

The new photonic chips use silicon as a miniaturised optical medium for transmitting and switching data at very high speeds. The optical interconnection offered by the new chips means that huge amounts of data can be sent and received at the same time in a highly efficient manner. Optical interconnects communicate through optical cables; which have a much higher bandwidth compared to traditional cables.

The innovation reduces power consumption and increases capacity at the same time, leading to lower operational costs for businesses. The first chips are currently in the test and characterisation phase, and have been shown to enhance network performance.

Researchers from Ericsson in Pisa, Italy, who are coordinating the project, have already generated and filed all relevant patent proposals. Indeed, industrial partners within the consortium strongly believe that it is of strategic importance now to develop new functions that will enable new products to be developed in the era of fifth generation (5G) mobile network technology.

The forthcoming 5G era is about bringing the capacity needed to cope with the projected increase in wireless communication and data exchange. This technology wave is expected to be introduced around 2020 and should last until approximately 2035.

Whatever 5G will be – and no one is completely sure yet – it is unlikely to be the same as previous generations (4G, for example, started off as a way to provide smartphone users with easy and quick access to internet-based services like YouTube, Facebook, and Netflix). One prediction for 5G is that it will include more business to business services, which is exactly where the IRIS project results fit in.

Provided by CORDIS

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