

Creating the fastest outdoor wireless Internet connection in the world

December 19 2014



Lancaster University engineers are to head up a European team working on the world's first W-band wireless system, heralding the arrival of cost effective, high speed internet everywhere, every time.

The ground-breaking £2.8 million TWEETHER project, funded by Horizon 2020, the biggest EU research and innovation programme ever, will set an important milestone in 'millimeter wave technology' for high speed wireless mobile and fixed point Internet.

Millimeter waves - extremely high frequency waves found in the spectrum between microwaves and infrared waves - are deemed to be the most promising and cost effective solution for the future.

The TWEETHER project will result in a powerful and compact transmission hub, based on a novel travelling wave tube power amplifier and an advanced chipset in a compact terminal, with performance far outweighing any other technology.

After three years of design and development, the system will be tested in a real operating environment.

The project has been sparked by the huge rise in demand for mobile data, which places unprecedented strains on networks to deliver more and more capacity.

Millions of users are now suffering a 'digital divide' because of the very limited availability of high data rate in most residential, sub urban or rural areas, where optical fibre, often slow and expensive to install, is not available.

"The enormous flux of data transferred via [wireless networks](#), increasing at a super-high pace, makes today's state-of-the-art networks quickly outdated, says Lancaster University's Professor of Electronics Claudio Paoloni, who is also the Project Co-ordinator.

"The huge spread of portable smart phone, tablets and the increasing demand of services hungry for data, such as high definition TV, videoconferencing and online games, are posing formidable challenges with the congestion of the available spectrum and the limits of present [technology](#)."

Professor Paoloni said the answer was the exploitation of unused portions of the spectrum but at higher frequencies.

The recent outstanding advancements in the field of vacuum electron devices and solid state electronics using millimetre wave frequencies

opens the route for the breakthrough in wireless [high speed data](#) communications.

Provided by Lancaster University

Citation: Creating the fastest outdoor wireless Internet connection in the world (2014, December 19) retrieved 23 April 2024 from <https://phys.org/news/2014-12-fastest-outdoor-wireless-internet-world.html>

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