LaserWAN - Laser Broadband Internet Connections

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Today the Internet is one of the most important services that everyone needs, for personal uses, but specially for business: email, web banking, cloud services, etc... Areas where is not possible to provide the users with a good web access are very disadvantaged and the problem, over time, worsens because the new web apps require more and more bandwidth. LaserWAN is a special and innovative laser optical wireless communication technology that allows to use high/medium voltage power lines to bring an ultra fast internet connection also to the most isolated rural areas, reducing the "digital divide". A LaserWAN line consists of a plurality of transceivers installed on the top of the power line pylons. These devices communicate exchanging invisible laser beams through the air following a chain scheme. The line starts near a big town, usually provided with a fiber-optic network. Here, a dedicated optical cable connects the first LaserWAN transceiver to the metropolitan network. The line usually ends near the HV/MV transformer, where a special device interfaces the last LaserWAN transceiver with FTTH/FTTC/VDSL/ wireless network distributor. The LaserWAN transceivers that I have designed employ innovative technologies like semiconductor lasers, EDFA optical amplifiers, advanced wavelength division multiplexing systems and a programmable parallax barrier filter. The LaserWAN transceivers implement also special moving lenses that can adjust the shape and the power of the beam depending on the weather conditions, ensuring high reliability. LaserWAN is therefore a high performance technology that, using an already-existing infrastructure, wants to contribute to reduce the digital divide by bringing everywhere the enormous potential of the web.

Awards Won:

Intel ISEF Best of Category Award of $5,000

Raytheon Technologies Corporation: Each winning project will receive $3,000 in shares of UTC common stock.

SPIE, the international society for optics and photonics: Second Award of $1,500

Qatar Foundation, Research &amp

Development: Award of $1,000

K. Soumyanath Memorial Award: First Award of $3,000