**DESCRIPTION FOR THE GENERAL PUBLIC (IN ENGLISH)**

Nowadays, almost no one can imagine life without the Internet. This global network provides people all around the world access to information, entertainment and for many of industries is the base of their operation. Present development of Internet and connected technologies is based on optical transmission systems that are capable to provide high transmission capacity. The growing user needs for higher and higher data rates motivate researches to find new solutions that are going to meet those needs.

One of the proposed solution is to adapt the second transmission window (1310nm) for dense wavelength division multiplexed (DWDM) systems. Connecting this solution with advanced modulation formats may drastically increase the capacity of present optical links. In particular the 1310 nm window can be used in parallel to 1550 nm window, which can lead to better utilization of the legacy single mode fibre infrastructure. However, operation in 1310nm domain may be influenced by two factors that can decrease the signal quality. The two most important are: nonlinear effects, in particular four wave mixing (FWM) and residual chromatic dispersion. The main goal the proposed project is to investigate the impact of mentioned effects on the advanced modulation formats like multilevel pulse amplitude modulation (PAM) and carierless amplitude phase modulation with band dividing (MultiCAP) in DWDM systems working in 1310nm domain. The investigated channel data rate will cover at least the range 25-100 Gbit/s directing towards transmission systems with >1 Tbit/s transmission capacity. In the project, system performance boundaries in the terms of capacity and reach will be established, taking into account mitigation of FWM and residual chromatic dispersion.

The results of the project can contribute to better utilization of the 1310 nm transmission window and development of cost effective transmission systems.