In recent years the field of laser beam shaping is gaining increasing attention. Together with that growing popularity, the need to create new, unconventional optical fields is also visible. The ability to independently shape light's amplitudę, phase, or polarization, paves the way to design complex but still controllable optical fields. Several such examples have been proposed so far. Starting from optical vortices having the wavefront twisted around the optical axis and moving towards vector beams having nonuniform polarization. Some examples of this structured light can exhibit exciting features, such as orbital angular momentum.

This project seeks to develop the simultaneous message-passing protocol with structured light. This concept fits into the trend to incorporate quantum solutions in classical applications. Such possibility exists due to the similarity between the world of quanta and classical optics. It is fair to say that the boundary between classical and quantum worlds started to blur recently, and the connection between those two emerged. In particular, our efforts will focus on developing the simultaneous message-passing protocol toward a reliable communication system. The primary attention will be given to the increase of the capacity to transmit and process classical information with structured light

We listed a few stages of the development that we believe are crucial. This list starts directly with increasing the system capacity, then movies towards implementing two independent information senders. The project's primary outcome will be the universal platform consisting of encoding and decoding algorithms and light structuring tools and procedures to make it adaptable for future applications.