The aim of the project is to develop, manufacture, and test a functional sample of a Coarse Pointing Assembly for optical inter-satellite communication. The mechanism is meant to be a part of a new product line aiming at satellite constellations. The crucial requirement of the design activities is an affordable price, which is expected to be dramatically lower than the price of traditional space mechanisms. This requirement dictates a use of parts, components, and manufacturing processes that are not traditionally used in space. The technical risk related to the use of non-space items is to be minimized by involving detailed analyses supported by a rigorous test campaign.

The Coarse Pointing Assembly (CPA – Figure 1) is a two-axis beam deflecting system which, when integrated with a telescope, provides a periscope form of coarse pointing. The CPA will provide large angular view ranges of the Field of Regard (FOR) and provide a low bandwidth means of control of the OISL terminal line of sight.
The TOPTEC Center is involved in the development of a manufacturing technology for CPA mirrors [Figure 2] with respect to the final surface microroughness of the mirrors and a large number of pieces to be produced for the satellite constellations. The mirrors will be manufactured using CNC machines that are typically used in mechanical workshops, i.e., not for optical production. TOPTEC uses its experience obtained during the manufacturing of non-glass optical components using the Single Point Diamond Turning technology [Figure 3]. Within this project, TOPTEC cooperates with partners Honeywell International s.r.o., Frentech Aerospace s.r.o., Sterch International s.r.o. and Brno University of Technology.