



## **Space scAvengers s.r.o.**

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Space scAvengers Ltd. (ID No: 53 812 565), founded on May 29, 2021, is headquartered in Bernolákovo with a branch office at the Slovak Academy of Sciences in Bratislava. Its main business focus is research and development in the fields of natural and technical sciences.

Currently, its primary focus is on the development of control software and a simulator for guiding, navigating, and controlling cooperative satellites in Earth's orbits for servicing operations on damaged or non-functional satellites.

The company's management is composed of experts with complementary experiences and knowledge. Tomáš Balog has experience in leading projects and teams in various fields, including physics, data sciences, and finance. Marek Gebura is experienced in managing research and technological development, while Michal Mlatiček is a senior software developer with extensive experience in the design and management of autonomous agents.

Currently, automation of operations in space is limited, especially in terms of potential solutions for future problems with satellites in orbit. GNC (guidance, navigation, control) requires manual operation, particularly during approaches or docking. However, for potential maintenance services, manufacturing, transport services for multiple spacecraft, or removal and recycling of space debris, there is a lack of automation software using artificial intelligence, such as computer vision, as autonomous operations reduce the risk of collision. However, not only autonomous functionality is required, but also a full technological solution that needs to be developed.

The company has a contract with ESA from 2021, which provides funding for current development activities. Its technology offers a unique solution that is significantly more cost-effective and efficient compared to existing competitor products. The project team consists of three founders and three volunteers with full expertise for the project's purposes.

At this stage, development of the first pillar of their solution is underway - a customized autonomous GNC using artificial intelligence for services in orbit, manufacturing, transport, and removal of space debris. Part of the solution is a user-friendly mission simulation tool. We collaborate with renowned institutions such as ESA, the Slovak Academy of Sciences, and Prvá zväračská a.s. The technology offers a unique solution compared to existing competitor products, including a collaborative perceptual system and artificial intelligence algorithms for autonomous navigation and synchronization.

The perceptual system is a mixture of advanced sensors including optical, infrared, and laser measurements, tightly integrated with the latest artificial intelligence algorithms. This hybrid system not only enables versatile data acquisition but also its intelligent processing. By merging inputs from sensors from multiple spacecraft, the system achieves a comprehensive and dynamic understanding of the space environment and the target satellite or debris. Artificial intelligence algorithms embedded in the GNC systems use this information for autonomous decision-making on the best course of action.