

International projects with new missions of the Technical University of Moldova National Space Technologies Center

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Abstract. Nowadays, space solutions are essential to ensure sustainable development and the peaceful use and exploration of outer space. The multitude of space applications such as remote sensing of the Earth, telecommunications and global navigation enhance economic growth and promote technological progress and it is the interest of all countries to have access to them and to obtain the benefits. Access to Space for All is a joint initiative of UNOOSA and space agencies, research institutions and industry that are involved in the development of technical knowledge, engineering processes and infrastructure of the United Nations member states in the fields of hyper- and micro-gravity, satellite development and space exploration [1].

Access to Space for All provides research and orbiting opportunities member states to have access to space and ensure that the benefits of space, in particular, for sustainable development. Space technologies, data and applications already play a key integral role in sustainable development, and their importance becomes even stronger in the coming years, underlining the importance of efforts such as Access to Space for All [1].

UNOOSA and Japan Aerospace Exploration Agency (JAXA) announces annual competition for the United Nations/Japan Cooperation KiboCUBE Programme on nanosatellite deployment from the International Space Station (ISS) using the Kibo Japanese Experiment Module. The National Centre for Space Technologies (NCST) of TUM submitted in 2019 year the nanosatellite project "TUMnanoSAT" to the competition for the 4th round and on August 12, 2022, at 12:45 pm, TUM made history when Moldova's first nanosatellite was deployed into Earth orbit. It is a historic first for the Republic of Moldova, marking the success of the efforts of a group of young researchers from TUM, supported in this ambitious project by development partners UNOOSA and JAXA. This project aimed to stimulate young minds by familiarizing them with aerospace technologies and to provide students with the skills and experiences needed to build pico- and nano-satellites.

NCST participated with project proposal "TUM's Payload Hosting Initiative - 2024" in the framework of The 2nd Announcement of UNOOSA and Mohammed Bin Rashid Space Centre for All initiative United Nations for Cooperation Programme on Payload Hosting Initiative, 2024. This project proposal goals are to verify the asset of two technology demonstration missions, which are of great interest both locally and internationally: assessing the feasibility of using the one COTS GNSS receiver payload module for accurately determining the positioning of satellites in orbit [2] and assessing the feasibility and performance testing of hetero-structures of a set of nano-sensors under space radiation conditions, which can be applied in many fields, including on board the ISS.

Recently, NCST participated with the project proposal "TUM's Payload J-CUBE - 2024" to the J-CUBE Project's International Collaborative Partner-Matching System. JAXA and the University Space Engineering Consortium (UNISEC) have announced CubeSat deployment opportunity from the ISS - JEM Small Satellite Orbital Deployer (J-SSOD) for Japanese universities called "Comprehensive collaboration agreement on CubeSat release from ISS Kibo

module for academic research and capacity building”. As a result of discussions with JAXA and UNISEC NCST has been selected as a partner on The Laboratory of Lean Satellite Enterprises and In-Orbit Experiments of the Kyushi Institute of Technology (Kyutech) from Japan. Recently, discussions on mission determination and the development of a joint CubeSat 2U nanosatellite have been ongoing, which will result in the conclusion with the collaboration contract between NCST and Kyutech.

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References

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