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OVERVIEW AND ROADMAP OF ITALIAN SPACE AGENCY ACTIVITIES IN THE MICRO- AND NANO-SATELLITE DOMAIN

Abstract

ASI has recognized the need to put emphasis on a through and integrated strategy to maximize the benefits from the micro- and nano-satellite domain in advancing overall Agency objectives. For the purpose ASI has established a new Operative Unit dedicated to the Development of Micro- and Nano-Satellites and has foreseen in its Plan of Activities 2021-2023 several initiatives covering the development of new missions and technologies for micro- and nano-satellites.
In regard of the micro-satellite field, the Operative Unit is next to start a mission named EAGLE, whose goal is to carry out a pre-operative Earth observation mission with optical remote sensing and, at the same time, the technology demonstration of miniaturized optical payload and electrical propulsion system. The EAGLE mission is now ongoing the Prime Contractor selection process that, once identified, will be funded for a three years design, development and verification, up to the in-orbit commissioning, activity.
The Operative Unit is also very active in the nano-satellite field, where a call for tenders called "Future cubesat missions" has been emanated to fund novel nano-satellite missions, either through ESA GSTP program or, when available, national resources. An incremental approach is adopted in this case by funding the mission up to phase A/B and then, if promising results are achieved, for the following phases. Of 49 received proposals, 20 have been selected as eligible to be funded and 11 can rely on already allocated funds. In particular, 2 of these missions will be funded through ESA GSTP, while the remaining 9 missions, 2 of which have been already kicked-off, will be funded with national resources. The 20 selected missions cover a very diversified spectrum of topics, including among others: telecommunication for internet of things, optical and radar remote sensing for Earth observation, astrophysics for space weather, Universe, planetary and NEO exploration.
In the final paper a thorough overview of ASI activities and its roadmap in the micro- and nano-satellite domain will be provided. Beside some insights of the EAGLE micro-satellite mission, synomptic tables showing selected nano-satellite mission details and progress status, will be discussed for the different envisaged applications.