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IAF SPACE SYSTEMS SYMPOSIUM (D1)
Technologies to Enable Space Systems (3)

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STEP: THE TECHNOLOGY PROGRAM OF ITALIAN SPACE AGENCY

Abstract

In order to compete with the increasing competitiveness at international level in the space sector, it is needed a continuos and coordinate effort for technology development. This effort implies the need to define medium and long term roadmap, shared with the industrial and scientific sectors, harmonized to those of others stakeholders as European Space Agency, European Commission, international partners in order to guarantee sustainability. To this purpose, Italian Space Agency defined a proper technology program in order to guarantee knowledge increase and acquisition of new enabling technologies, with a technology push and mission pull approach, with the aim to increase the competitiveness of national scenario. STEP, the technology development program ensures the availability of enabling and innovative technologies for future missions of ASI at national or international level for all the specific application domains. The program encompass the development of upstream and midstream technologies with the main focus on some critical and strategic areas of interest as innovative materials, technologies for thermal control, radhardening and shielding, power generation and management, propulsion, AOCS, robotics and artificial intelligence, EEE components, sensors, photonics and quantum technologies. A multi-step approach has been defined:

• STEP.1: development and scouting of innovative and disruptive technologies at low technology readiness level (TRL), generally proposed by academia and research centres. The aim is to guarantee the development of low TRL technologies through an open innovation approach, for future space missions through long term initiatives.

• STEP.2: consolidation of strategic technologies to increase competitiveness, developments and products at the state of the art through medium term initiatives for all applicative sectors.

• STEP.3: reduction of time-to-market of space products, in-orbit demonstration of technologies with the aim to test in relevant environment critical technologies and increase their reliability and trustworthy.

• STEP.4: technology transfer activity in order to take advantage of space technologies in other industrial sectors and vice versa (spin-in, spin-out) as for example medical, automotive, energy though the definition of proof-of-concepts and demonstrators.

In addition to this generic and wide program, the Agency also defined some priority roadmap based and harmonized with its strategic interests. The roadmap currently under implementation are the synthetic aperture radar (SAR) roadmap, the optical roadmap and the roadmap for robotics and artificial intelligence.

The full paper will present in details the definition of the technology program of the Italian Space Agency and the more recent results for the different initiatives under implementation.