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Author: Ms. Charlotte Croison
Novaspace, France

Ms. Natalia Larrea Brito
Novaspace, United States

FROM GALILEO TO LUNAR EXPLORATION: HOW PPPS STIMULATE SPACE INNOVATION

Abstract

For decades, space programs have been the sole domain of leading space countries. They have traditionally considered the private sector only as manufacturer of government-owned programs. However, that is no longer true. Both sectors have now understood the mutual benefits that partnerships might bring to both parties, while boosting space innovation in various applications - ranging from 'traditional' space activities as Earth observation, Telecommunications and Navigation, to Lunar and LEO human spaceflight exploration.

This paper will first explore the emergence of Public Private Partnerships (PPP) in the space sector, and the reasons that have pushed governments to turn to commercial stakeholders to fill their public needs. While PPPs might emerge from funding constraints, they might also be motivated by a lack of capacities in the public sector and the need to rely on the private sector's expertise and know-how. Although, PPPs are multifaceted and adapted to the needs of each project, the analysis of the first PPPs models and how they were used to develop 'traditional' programs such as Galileo and Skynet would allow the identification of common elements, key factors of success as well as stumbling blocks to avoid.

Building on successes in 'traditional' space applications, new kinds of PPPs are now considered in the New Space Age. More specifically, they have appeared as key in to maintain and extend the human presence in outer space. It first started with the development of commercial services to the ISS with NASA's Commercial Orbital Transportation Services (COTS) and Commercial Crew Development programs.

Following its own model, the US is expanding the use of PPPs to accelerate its crewed return on the Moon. In this objective, the country has notably launched the Commercial Lunar Payload Services initiative and the Gateway Logistics Services. Other agencies follow its lead, as ESA through its permanent open Call for Commercial Partnerships and perhaps soon the Japan Aerospace Exploration Agency (JAXA) and the Canadian Space Agency (CSA). Based on these first programs, this paper will study the benefits of deploying PPPs for the Moon exploration, and to which extent these partnerships are key for the future of human activities in outer space.