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IMPACTS OF COLLABORATIONS IN SPACE SCIENCE AND TECHNOLOGY R&D IN CANADA

Abstract

Research and development (RD) activities in space science and technology produce direct and indirect benefits to society through the production and transfer of knowledge and technology. These benefits can range from a wide variety of applications such as new medical techniques, optical instruments, electronic components, meteorological services, etc. In order to understand the innovation mechanisms in the space RD scene and capture the economic, social and technological impacts of public and private investments, various types of analysis can be performed. One of the proposed methods consists in evaluating and measuring the benefits resulting from the collaborations between stakeholders. Collaborations can play an important role in facilitating the dissemination of knowledge to contribute to extend the benefits of space innovations. Open innovation, cross-fertilization of research and quadruple helix are mechanisms that have the potential to connect communities to accelerate innovation and spin-offs. Collaborations among the players are however shaped differently depending on the sector of activity; underlying factors influencing the types of relationships are such as the needs, types of players, availability of resources and objectives pursued. The specificities of sectors, whether related to human or robotic activities, are therefore foreseen to influence the nature and outcomes of collaborations. Impact measurement activities not only play an important role in justifying players' investments but also help understand the innovation patterns and efficiency of the different mechanisms used. This paper will present a methodology to measure the impacts of collaborations in RD for the Canadian space sector by looking at scientific outputs, social networks and benefits captured by the stakeholders involved. Preliminary results for three sectors of activity will be discussed: space medicine, rovers and earth observation. Society is benefitting from space innovations at many levels and to continue to do so, measures related to performance of collaborations can bring significant inputs to accelerate innovation and ensure the population is taking advantages of all the benefits engendered.