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IMPACTS OF COLLABORATION IN SPACE EXPLORATION R&D IN CANADA: CONNECTING  
THE STAKEHOLDERS TO ACCELERATE INNOVATION

**Abstract**

Innovation in space science and technology involves interactions between players from the public and private sectors. The space exploration research and development (RD) activities pursued by the government, the industry and academia, stimulate innovation through the creation and dissemination of new knowledge which have the potential to consequently benefit society. Actors outside the relatively close space community can also find incentives to join space exploration efforts. Collaborations among the various stakeholders are therefore shaped differently according to needs, types of players, availability of resources and objectives. The different collaboration dynamics lead to diverse patterns of benefits and impacts. Mechanisms such as open innovation, cross-fertilization of research and quadruple helix have the potential to connect scientific communities to accelerate innovation and spin-offs. At the same time, initiatives including the media and the population will capture public attention to carry the vision for space exploration. This paper will present a methodology to measure the impacts of collaborations in RD for the Canadian space sector and preliminary results will be discussed. An international perspective will also be discussed. The specificities of sectors, whether related to human or robotic activities, are foreseen to influence the nature and outcomes of collaborations. Impact measurement activities not only play an important role in justifying stakeholders' investments but also help understand the innovation patterns and efficiency of the different mechanisms used.