

## BUSINESS INNOVATION SYMPOSIUM (E6)

## Entrepreneurship and Investment for Innovations in Commercial Space Access Activities (1)

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bradley.cheetham@colorado.eduTHEORY BASED ANALYSIS OF THE COMMERCIAL CREW TO ORBIT TRANSPORTATION  
INDUSTRY STRUCTURE AND EVOLUTION**Abstract**

With the retirement of the U.S. Space Shuttle program, transportation to Low Earth Orbit for American and ISS partner astronauts is solely reliant on foreign providers. Current NASA policy is to procure this crew transportation to orbit from a fleet of emerging of commercially developed and owned vehicles when they become available. This availability is in the process of acceleration through strategic government financial investments. Such government influence on the commercial crew to orbit transportation sector of the space industry serves to dramatically decrease the expected delivery timeline, but also has a substantial impact on the structure and evolution of an industry that will ultimately require multiple customers to thrive. Market driven concerns are a fundamental pre-requisite to the eventual growth of this sector and this work will outline the industry's structure based on extensively vetted theory-based analyses. The foundation for this analysis is based on the work of Michael Porter and its subsequent modifications and additions to accommodate unique sector influences. The sector in questions is currently in a dynamic phase of evolution with major government investments advancing technology and subsequent competitive awards likely to shape the near-term sector and its participants. The nature of this changing environment necessitates the continuous re-evaluation of analyses such as this work and for this reason; this work will build on previous efforts to define this industry sector's structure. As current programs begin to reach phases of integrated vehicle systems and comparatively long-term contracts are awarded, the structure and evolution of this sector will become more well-defined. With the resolution of these uncertainties comes the emergence of other market driven factors pertinent to customers beyond the U.S. Government. As the major players within this sector continue to approach the availability of complete system solutions for delivering crew to orbit, the ability to strategically serve alternative customers will in many cases dictate the sustainability of commercial efforts. The intent of the analysis presented in this paper is to provide a sector-wide perspective on the fundamental evolution of industry structure. Such information can be used by government and commercial decision-makers to inform subsequent more competitor specific strategy. Combined with data-based industry analysis, this work is provided publicly to encourage, facilitate, and promote the development of safe and sustainable commercial space transportation activities.