

BUSINESS INNOVATION SYMPOSIUM (E6)
Public/Private Human Access to Space - Supporting Studies (2)

Author: Ms. Brienna Henwood
The National AeroSpace Training And Research Center (THE NASTAR CENTER), United States

Mr. Ken Davidian
Federal Aviation Administration Office of Commercial Space Transportation (FAA/AST), United States

APPLYING GAME THEORY TO COMMERCIAL HUMAN SUBORBITAL TRAINING

Abstract

Game theory is the study of strategic decision making. When applied to the commercial human suborbital training industry, game theory can be used as a strategic tool to understand, evaluate, and challenge how changing the individual parts of the game can alter competitive advantage outcomes; such as finding ways to better protect human health and safety, manage customer and operator expectations, and facilitate an industry of collaboration and growth. Innovation models such as game theory can additionally provide new industry perspectives on ways to support new commercial spaceflight entrants, opportunities, and advantages for government, private, and individual human spaceflight interests.

In game theory, it is said that “what you get depends on your power in the game as well as on the power of others who have competing claims on the pie.”² In order to join the game or change the game in any way, you need to play the game differently. This is done by looking analytically at the game and its players, and altering one or more of its elements. One strategy used to change the game, is known as the PARTS strategy (players, added values, rules, tactics, and scope) which this paper will discuss.

Understanding how to recognize and manage the both the physiologic and psychological stresses induced by high gravitational accelerations common to commercial space flight trajectories, is important for the future health, safety, and sustainability of the commercial spaceflight industry. Spaceflight training companies have developed methodologies to evaluate human tolerance, control and operation, and personal enjoyment during nominal and off-nominal (emergency) flight scenarios. In several cases academic curriculum is combined with flight exposures to prepare pilots, crew, and spaceflight participants for the rigors of space as well as facilitate personal and commercial suborbital spaceflight mission objectives.

Applying the game theory innovation model to the emerging commercial human suborbital training industry provides new perspectives and ways to achieve personal health, safety, and flight training preparedness goal outcomes by adjusting the parts of the game. Game theory is one of the innovation models used to provide a comprehensive and structured analysis of an industry and can be a significant asset to the commercial space industry in its ability to grow, change, and be challenged over time as the industry matures.