Paper ID: 24144
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BUSINESS INNOVATION SYMPOSIUM (E6)
Case Studies and Prizes in Commercial Space (1)

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EXPANDING OPEN METHODS: LINKING SYSTEM LEVELS TO CONCEPT MATURITY

Abstract

The use of open innovation methods – understood as e.g. prize competitions, community and public solicitation, distributed decision-making – has propagated through a variety of fields and organizations, who see value in the potentially high-leverage results that these method bring with them. Recognizing the rising trend and its respective benefits, the United States government enacted the America COMPETES Reauthorization Act in 2010, authorizing and encouraging its agencies to include open innovation methods within their practices. In this vein, NASA initiated a public Request For Information (RFI) on the broader subject of its Asteroid Initiative: a two-pronged effort to both launch a robotic-human mission to a nearby asteroid, as well as form and strengthen a (non-NASA) community around asteroid detection. The participants were asked to submit ideas concerning different aspects of the overall Asteroid Initiative program. NASA received hundreds of submissions from a multitude of sources, ranging in scope, system level, quality, and subject matter.

NASA personnel, who were generally satisfied with the quantity and quality of responses, then evaluated, vetted, and ranked the RFI results based on criteria specific to this call. However, these factors did not consider (nor reveal) a critical aspect for possible assimilation within the sponsoring organization: a contribution's architectural level within the given system. Past work focused on the competitive aspects of such processes, ranking submissions based on scoring criteria and ensuring that incentive levels promote "fair" competitions, while mostly agnostic of the effort exerted by individual solvers. But in the absence of explicit architectural level and concept maturity specifications, what is the link between the external submission's concept maturity and the levels of the system's architecture? How can we use this relationship in future RFIs to obtain meaningful, innovative submissions in-line with the organization's operations?

The submissions were analyzed by coding based a number of important factors, including solver type, architecture level and concept maturity, and reveal trends of siloing of ideas based on the solver's expertise, as well as variation on concept maturity based on the (assumed) infrastructure available to certain solvers. The analysis presented here contributes key insights for the design of similar open initiatives in the future.