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AN EMPIRICAL ANALYSIS OF OPEN INNOVATION METHODS

Abstract

With the renewed and increasing use of open innovation methods it is fundamental that we take a careful look at the regions where these methods are widely applied in practice vs. where open methods can/should be extended. Open innovation methods broadly include: prize competitions, grand challenges and collaborative communities. Within the United States' government renewed emphasis has been a result of The America COMPETES Reauthorization Act of 2010, which for the first time granted all agencies the legal authority to conduct prize competitions. The act encourages the use of open innovation methods to "spur innovation, solve tough problems, and advance their core missions."

When applied appropriately, open methods can: (1) focus communities, without picking winners; (2) benefit from a wider spectrum of solution approaches, without bearing additional programmatic risk; (3) encourage wider participation, and in so doing garnering public engagement in important problems; and (4) achieve extremely high-leveraged investment, since the aggregate expenditure of contributors tends to exceed the prize purse by an order of magnitude.

The authors of this work bring a systems engineering perspective to the discussion of where methods can (and could) work and can (and should) be used. Three dimensions underlie this perspective: (1) extent of upfront decomposition on the part of the seeker; (2) interaction of solving ability and problem formulation; and (3) willingness to contribute on the part of the solver.

The authors group open methods tried to date into five categories; Market stimulating challenges solicit fully implemented solutions to extremely difficult, typically complex problems (e.g., Ansari X-prize), Lead user tinkerers and entrepreneurs innovating by modifying existing systems to suit their advanced specialized needs (e.g., adventure sports), Software development communities which are characterized by low costs of individual contributions, complete decomposability of problems, and a large number of qualified contributors (e.g., TopCoder, hackathons), Broadcast searches seek to pose problems in a domain agnostic way, hoping to find answers where the seeker wasn't previously looking, and Prize based procurements pose self-contained (i.e., fully decomposed), minimal effort, challenges that are later aggregated by the seeker (e.g., mechanical turk).

This paper is an empirical analysis of real problems where the upfront decomposition on the part of seeker varies, illustrating an apparent difference correlated to the system decomposition before applying open methods. There are clear patterns that could imply significant boundaries in the use of open methods as a function of system complexity and upfront decomposition.