Center of Excellence for
Collaborative
Innovation

National Aeronautics
and Space Administration

Challenge Platform: NTL

CoECI Overview

Established in November 2011, the CoECI serves to advance the use of open and distributed innovation methodologies to improve government missions.

The COECI provides guidance to other federal agencies and NASA Centers on implementing open innovation initiatives from problem definition, to incentive design, to post-submission evaluation of solutions.

External Crowdsourcing with NASA Tournament Lab (NTL)

NASA and Harvard Business School in association with Harvard's Institute of Quantitative Social Sciences established the NASA Tournament Lab (NTL), which enables software developers to compete with each other to create the best computer code for NASA systems.

The NTL provides an online virtual facility for NASA researchers with a computational or complex data processing challenge to "order" a solution, just like they would order laboratory tests or supplies. In return, researchers receive a finished software solution at lower cost than if they hired an individual developer or team.

Software developers compete with each other to create a winning solution, as measured by internal code quality, performance against benchmarks, and ability to be integrated into NASA systems. This approach, often termed "crowd sourcing" or "broadcast search," lessens the effects of uncertainty in software development by searching through multiple, parallel paths for a problem solution. Instead of relying on one individual or team, the researcher can access many, independent ideas, which increases the chances of a successful solution.

TopCoder Inc., a company that administers contests in software architecture and development, manages and conducts the tournaments. Founded in 2001, TopCoder provides a stable infrastructure for conducting competitions. Competitors interact through the TopCoder website, a place for TopCoder members to obtain problems, submit solutions, judge submissions, and view results, scores, and statistics. All of a member's activities are tracked in real-time and statistics on performance are made available for all to see. The website also facilitates discussion and interaction, providing the community with a "town square" with discussion boards and a wiki to share information.

The lab is housed at Harvard's Institute for Quantitative Social Science under the direction of Principal Investigator and Harvard Business School Professor Karim R. Lakhani, a leading scholar on distributed innovation and crowdsourcing. London Business School Professor Kevin Boudreau, an expert on platform-based competition, is the chief economist of the NTL. Under the NTL initiative, Lakhani and Boudreau also conduct basic empirical research on the appropriate contest design parameters that yield the most effective solutions in a tournament setting. This enables the routine use of innovation tournaments as a problem solving approach within NASA and the rest of the public sector.

Contact Us

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