

Using Game Theory In Construction - Limiting Risk By Taking Construction Management To The Next Level

A game theory paradigm has the potential to improve construction decision-making, in real time.

PHILADELPHIA, PA, USA, November 13, 2023 /EINPresswire.com/ -- In a game, the object is to



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*James Gallagher, P.E., F.ASCE,
Principal, Resolution
Management Consultants*

win. However, during a game, players usually encounter a number of winning and losing experiences on the road to completing that game. To win, one must minimize losses and maximize achievements. Construction management is analogous - the object in construction is to complete the project as envisioned, within the budgetary and timeline goals established, which is seen as a win. Along the way to completion, it is important to minimize problems that arise, or even better, to anticipate problems and proactively prepare to minimize their effect or eliminate them before they occur.

Project planning is one answer to achieving a win in construction. But what type of planning? For example, Earned Value Management (EVM) has been an excellent protocol for years, because it deals with two of the most important issues in construction management, schedule and budget. However, is it enough?

According to James Gallagher, Principal at Resolution Management Consultants, "Traditional methods of construction management, like EVM, are designed to manage toward the creation of value at the project's end - the project was either on time, on budget, or it wasn't. Until fairly recently, construction management has been a linear process that typically does not account for such variables as quality, variations, the unexpected or recommending what to do next. A game theory paradigm has the potential to improve decision-making because, in real time, it has a broader scope, learns from prior actions, updates assumptions and suggests course corrections, as the project progresses to completion."

Gallagher observes: a key to successfully applying game theory to construction projects starts

with collaboration by all the project's participants, because game theory analysis and outcome depends on everyone's expectations, decisions, actions and outcomes. Although one doesn't necessarily have to embrace a full-scale BIM (Building Information Modeling) process in order to implement game theory into construction management, utilizing game theory as part of the risk register process, can significantly enhance the "win". Game theory management is also a valuable tool for identifying how to shift risk or share risk within the project in order to minimize its effect among participants.



James Gallagher - P.E., F.ASCE, Principal, Resolution Management Consultants, Inc.

As construction projects have gotten larger and more complex, advanced computer modeling, monitoring, updating and reporting have become beneficial enabling simulation of the many possibilities and alternatives, updated in real time, while processing the best courses of action. Since prices have come down on game theory-based construction management software, over the last few years, its advantages have now become accessible to managers of medium and smaller-sized projects, as well.

Adding an artificial intelligence (AI) component to game theory software is the wave of the future. AI should add a new dimension that will be even more effective in anticipating causation leading to negative results and disputes.

Said Gallagher, "Construction project management has always been multi-dimensional even though our management tools have been somewhat less so. By incorporating game theory into the construction management process, companies will have more powerful tools at hand to leverage and magnify value while reducing risk."

 About Resolution Management Consultants, Inc.

Resolution Management Consultants, Inc. (RMC) is a nationally recognized consulting firm headquartered in Marlton, NJ. There are two sides to the business: the construction planning and management aspect – helping clients build more successful projects – and the litigation aspect – dispute analysis and mediation and, should matters go to court, providing analysis and testimony as expert witnesses. Founded in 1993 by veterans in the construction, contracting and engineering professions, RMC has assisted numerous private owners, public agencies and

contractors in either achieving project goals or resolving cost and time disputes between the contracting parties.

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