

Dynamic project management model based on the Project Management Body of Knowledge (PMBOK 6) mindset and vocabulary

Luciano Sales*, Rodrigo Augusto**, Antônio Duarte*, Sanderson Barbalho*, Giselle Leite*

*Universidade de Brasília

** University of Texas at Arlington

Keywords

System Dynamics, Project Management, PMBOK, stakeholder engagement

Extended Abstract

Project Management became a widespread accepted practice among professionals and organizations from several domains at the same measure projects grew in popularity and importance. Today, it is estimated that up to 30% of the world's economy can be traced back to projects, many of them being complex systems.

Unfortunately, despite their importance and relevance, projects that fail to meet constraints such as cost and schedule, just to name a few, are commonplace across the project management community. One of the contributing factors for this reality is an almost exclusive reliance on traditional approaches employing inadequate or incomplete mental models. These models are currently accepted as the de facto standard for Project Management.

System Dynamics has a long history of being jointly applied with Project Management, the former leading to the improvement of the latter through the adoption of dynamic models in addition to the traditional models. Despite the improvement potential, up to this point, SD failed to be properly diffused to the Project Management community.

The result of this failure is a lack of trust by said community on dynamic models originated from SD. Besides the previously mentioned mental model barrier, another barrier may be differences in vocabulary, which represents a further obstacle with regards to the establishment a holistic and accessible dynamic model structure.

As such, the main purpose of this work is to propose an integration of the accepted mental models as well as vocabulary from traditional Project Management to the dynamic

approach originating from SD. The model presented on the PMBoK guide 6th edition was chosen as representative of the traditional management approaches due to its globally accepted vocabulary.

We focus on PMBoK's work package flow and its rework cycles. The study methodology was inspired on the research by Luna-Reyes & Andersen (2003) and its four steps, namely "Conceptualization", or system modeling, "Models Integration" or traditional and dynamic models overlay through development of flow and stocks diagrams, "Testing" or simulations of the new model's behavior and outcomes, and finally, "Implementation", through the application of a case study to validate the simulation results.

The results coming from the application of said steps are encouraging, with project management professionals related to the case study claiming to be able to well understand the proposed model and also reporting that simulation results were very close to real-life results. These professionals also reported that several issues that occurred throughout said project would most-likely be avoided, if such model was in place while the project was in execution.

Another reason for encouragement was the high level of interest by the professionals in applying the proposed model. As a future work, the participation of more professionals is desirable, as well as the use of more case-studies.