

Proper Reliance on Artificial Intelligence in Project Management ¹

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There is a growing and proper interest in the deployment of artificial intelligence (AI) into the management of projects, especially large, complex projects. I have previously written about this² highlighting some of the limitations, cautions and transparency required while at the same time outlining the benefits available. I suggested that data looking at the broader project environment (stakeholder, regulatory, labor etc.) may provide even earlier insights given the propensity of large, complex projects to frequently be adversely impacted by external factors, outside the project team's direct control.

In a subsequent paper³ I highlighted some of the ethical challenges one may face in the proper use of AI. For projects these included clearly understanding the scope and limitations of training data and ensuring that the specific AI algorithms being deployed are appropriate to the use case at hand. Transparency, and arguably certified validation and verification processes, are essential to confident use of AI in predicting project trajectories and likely performance.

Many of the AI efforts aimed at project management today are focused on performance prediction stopping short of addressing its role in a changed project management system. This is the equivalent of a state of the art fire detection system that detects when a fire begins much earlier than traditional detectors, but stops there, without the balance of the "system" responding to assess the situation, suppress the fire, and confirm the fire is out removing other similar flash points.

Proper reliance on artificial intelligence in project management requires a comprehensive project management system encompassing:

- Strong AI Predictive Tools, with known confidence levels at various time frames (Less confident prediction of failure early on but with a strengthening predictive confidence as more time lapses), including:

¹ How to cite this paper: Prieto, R. (2019). Proper Reliance on Artificial Intelligence in Project Management; *PM World Journal*, Vol. VIII, Issue VIII, September.

² Prieto, B. (2019). Impacts of Artificial Intelligence on Management of Large Complex Projects. *PM World Journal*, Vol. VIII, Issue V, June; <https://pmworldlibrary.net/wp-content/uploads/2019/06/pmwi82-Jun2019-Prieto-Impacts-of-Artificial-Intelligence-on-Management-of-Large-Complex-Projects.pdf>

³ Prieto, R. (2019). Artificial Intelligence Ethics in the Project Management and Civil Engineering Domains; *PM World Journal*, Vol. VIII, Issue VII, August. <http://pmworldlibrary.net/wp-content/uploads/2019/08/pmwi84-Aug2019-Prieto-artificial-intelligence-ethics-in-project-management-and-civil-engineering.pdf>

- Transparent and robust AI algorithms, trained on known, relevant data sets and validated for intended use.
- Knowledgeable deployment of validated AI to use cases verified to be consistent with the validated AI.
- Recognition of AI limitations due to excluded data (external ecosystem data) and an assessment of the relevance of its consideration in the particular use case (project)
- Effective and meaningful project reviews, undertaken regularly and using AI predictions to focus and strengthen the depth of project reviews and diagnosis. AI tells us the project has a “fever” but management, especially more senior levels of management with broader more holistic views, must seek the underlying causes and develop a treatment plan. I have previously written⁴ about the adverse impacts from perfunctory or non-existent project reviews which are becoming all too common.
- Decisive action not delayed by a defensive response to what the AI is saying but driven by the earliest diagnosis obtained from the now heightened regular project review process and any “deep-dive” review it may trigger. AI will produce “false positives” or maybe in this context the term “false negatives” may be more apt. Its ability to predict project success is not yet well established which may speak more to the nature of large, complex projects than artificial intelligence. Even when the AI has made the right call, raising concerns on project performance and trajectory, initial diagnosis and treatment plans may evolve as more insight becomes available. The value of time⁵, afforded by the AI’s predictive analytics, must not be lost.
- Independent audit of the projects performance improvement as a result of the diagnosis and treatment undertaken. This independent audit must look not just at the new performance data but also confirm the completeness of the diagnosis, ensuring that other systemic factors do not exist that will impact the project again at a later stage.

⁴ Prieto, R.; Management of Engineering in Design/Build; National Academy of Construction (NAC) Executive Insights; July 6, 2019; <https://www.naocon.org/wp-content/uploads/Management-of-Engineering-in-Design-Build.pdf>

⁵ Prieto, B.; Perspective on the Cost of Delayed Decision Making in Large Project Execution; *PM World Journal*, Vol. III, Issue II–February 2014; https://www.researchgate.net/publication/271849910_Perspective_on_the_Cost_of_Delayed_Decision_Making_in_Large_Project_Execution

Artificial intelligence’s predictive power is a powerful new tool in a project manager’s toolbox. But like any tool we must understand its proper use, limitations and how to best use it with the other tools at our disposal.

Proper Reliance on Artificial Intelligence in Project Management

Strong AI Predictive Tools

Effective & Meaningful Project Reviews

Decisive Action

Independent Audit

About the Author



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Bob Prieto is a senior executive effective in shaping and executing business strategy and a recognized leader within the infrastructure, engineering and construction industries. Currently Bob heads his own management consulting practice, Strategic Program Management LLC. He previously served as a senior vice president of Fluor, one of the largest engineering and construction companies in the world. He focuses on the development and delivery of large, complex projects worldwide and consults with owners across all market sectors in the development of programmatic delivery strategies. He is author of nine books including “Strategic Program Management”, “The Giga Factor: Program Management in the Engineering and Construction Industry”, “Application of Life Cycle Analysis in the Capital Assets Industry”, “Capital Efficiency: Pull All the Levers” and, most recently, “Theory of Management of Large Complex Projects” published by the Construction Management Association of America (CMAA) as well as over 600 other papers and presentations.

Bob is an Independent Member of the Shareholder Committee of Mott MacDonald. He is a member of the ASCE Industry Leaders Council, National Academy of Construction, a Fellow of the Construction Management Association of America and member of several university departmental and campus advisory boards. Bob served until 2006 as a U.S. presidential appointee to the Asia Pacific Economic Cooperation (APEC) Business Advisory Council (ABAC), working with U.S. and Asia-Pacific business leaders to shape the framework for trade and economic growth. He had previously served as both as Chairman of the Engineering and Construction Governors of the World Economic Forum and co-chair of the infrastructure task force formed after September 11th by the New York City Chamber of Commerce. Previously, he served as Chairman at Parsons Brinckerhoff (PB) and a non-executive director of Cardn0 (ASX)

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