

Artificial Intelligence Use in Project Management¹

Part 1: Issues That Project Managers and Other Members of the Project Team Should Be Aware of²

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Introduction

Artificial intelligence (AI) is receiving a great deal of press, and the bulk of the press is positive. Even when acknowledging the positive attributes of using AI, the project manager and team members need to be as aware and knowledgeable of the issues that AI use can present to the project.

The term artificial intelligence is used for the theory, continual development, and the application within computer systems to accomplish tasks that had been the domain of human beings. The term intelligence is used to mean the rational review of available data to present solution sets to various queries by the user. It is not intelligence as used when referring to a human being, thus the first issue. Human beings use not only their cognitive intelligence, but they use their social and emotional intelligence to go beyond the data. What does this mean? Even those AI tools that can attach social data to the general data being queried, they do not have the means to add to the solution set the emotional understanding of the application of the data. So why is the social intelligence not enough? A context of environment of application of data is not a complete understanding of social environment. The AI technology can provide a list of stakeholders, generally potential and actual stakeholders; it cannot provide a complete understanding of the messaging in team environments, which is a critical task for a project manager.

For a more complete understanding of the approach to be used in the series of papers that will cover this topic, these definitions are provided:

¹Editor's note: This article is an introduction to a series of articles by the authors on the use of artificial intelligence (AI) in the project management field. While the authors recognize the rapidly growing attention on the potential power and impact of AI on project management, they also want to point out the risks of assuming AI and human intelligence are or can be equated. The authors have previously researched and published on topics related to neuro-behavioral issues and cognitive intelligence in project management.

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- **Cognitive intelligence** – often referred to as the intelligence quotient, but it goes beyond that to a broader understanding including capabilities, skills, and experiential learning.
- **Emotional intelligence** – ability to perceive, understand, and manage one’s own emotions and relationships that requires not only being self-aware, but being aware of others emotional interactions, social awareness.
- **Social intelligence** – ability to understand one’s and others action in the environments where one is interacting and the ability to apply aspects of past interactions and understanding the social constructs presented by any interaction with groups of individuals.
- **Algorithms** – set of processes or rules to be followed for calculations and other operations, including providing a response to queries requiring data and other information to be provided to answer queries
- **Bias** – prejudice, distortion, or skewing of data or text responses; can also include how data supplied by AI is used and the context in which it is applied; can include the human and systemic
- **Machine learning** – considered a subset of AI, includes the system of algorithms or the neural network within the broader AI system that builds upon data sets to facilitate the performance of the computer or computers to analyze data and make predictions without human intervention outside of the algorithms developed to achieve the building of analysis approaches and the use of data for predictions
- **Neural science** – multi-disciplinary approach to examine the structure and function of the human brain, inclusive of the nervous system
- **Behavioral neuroscience** – studies the interfaces presented in a given environment as it relates to the human being in the case of AI

Throughout the series of papers other terms will be defined for greater understanding of the topics presented.

Cognitive Neuro-readiness in Regard to Artificial Intelligence

Bridging Artificial Intelligence and Human Cognition

In the current landscape of project management, the promise of AI to transform processes is tempered by the need for greater, more informed human understanding. Cognitive neuro-readiness emerges as a critical discipline to bridge the gap between AI's structured processing capabilities and the rich heuristic paths and cognitive biases of humans. Integrating this

advanced understanding into project management practices not only enriches the application of AI but also aims to refine the interaction and understanding of the interaction between the technology and human intuition.

Framing Cognitive Neuro-readiness

Cognitive neuro-readiness can be understood as the natural and undistorted ability to use AI in a way that complements human abilities in projects, and vice versa. This concept aligns with the vision of NeuroAI, which promotes a symbiosis between AI's computational abilities and human intelligence. In this context, decisions are not only technically sound but also "deeply human," reflecting an empathetic and ethical understanding, crucial in an interactive and socially complex work environment.

Integrating Cognitive Predisposition into Project Management Practices

Adopting cognitive neuro-readiness requires a shift in mindset that goes beyond merely accepting new technologies. For project managers it requires that they are open to change, demand continual growth, and a continual mindset growth as the approach for "sustainable growth and acceptance." This implies viewing each project not just as a set of tangible objectives to achieve and benefits to accrue but as an opportunity for the continuous enhancement of team capabilities. Integrating this approach creates intangible value that complements the tangible outcomes of the project, resulting in a project that recognizes the project is a system of systems that should work seamlessly together. This vision anticipates and responds to the needs of an increasingly dynamic academic and professional environment, offering an innovative perspective that combines advanced theory with practical applicability.

Futuristic Perspectives and Reflections

Promoting augmented cognition goes beyond merely keeping pace with technological advancements; it requires operating at a higher, more self-aware level. This operating level means maximizing one's capabilities with reduced effort, which could enhance efficiency and effectiveness in project management and decision-making. Through the integration of technology, which can amplify natural cognitive abilities, augmented cognition enables an enhancement of mental capacity, making actions more impactful and decisions quicker and more informed. This approach suggests using cognitive neuro-readiness to actively shape the future of project management, urging managers not only to respond to innovations but to actively engage, incorporate, and support the incorporation of AI in the management and implementation of the project. This approach does not ignore various issues attending to AI, but it enables the team to fully leverage the innate potentials of the human brain of each team member. This approach not only informs senior or next-generation project managers but also inspires them, inviting reflection on how they can personally and professionally grow and adapt in an ever-fluid landscape of technological advancement and project management optimization.

Conclusions and Other Insights

In future papers the team will explore some of the technical advantages and issues regarding the introduction of AI into project management, which have been documented and are currently being studied. The team will also offer various solutions sets and mitigation approaches to reduce negative impacts and enhance the positive impacts.

AI is a tool and should not be personified as another team member. But it can be viewed as a tool that will allow individual and team learning, allow for teams to challenge performance and biases, as well as providing information faster. But remembering that one needs to validate and verify the information provided by the tool.

About the Authors



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Ivano di Filippo is a distinguished scientist in Applied Cognitive Neuroscience, focusing on project management and artificial intelligence. He currently leads the Cognitive Readiness Research Program, which is dedicated to advancing the mental preparation of leaders. From 2017 to 2019, Ivano served on the Board of Directors at the Italian Institute of Project Management (ISIPM), where he also holds certification as a Project Manager.

Educated in medicine at La Sapienza University of Rome, Ivano furthered his technical skills in computer science, working for ten years as a professional IT and Web programmer. His diverse expertise is enriched by over 30 years of studying and practicing Zen, integrating oriental disciplines into his professional and personal life.

In 2011, Ivano joined forces with Prof. Dr. Russell Archibald and Dr. Daniele Di Filippo in the international research program on Cognitive Readiness, eventually succeeding Dr. Archibald as the Program Director at his request.

In November 2022, he was appointed the Scientific Referent at ISIPM, continuing to impact the field with his innovative approach to integrating neuroscience into project management practices.

He is the co-author of the book “Cognitive Readiness in Project Teams - Reducing Project Complexity and Increasing Success in Project Management”. He can be contacted at



Dr. Josh Ramirez

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Dr. Josh Ramirez, PMP, NPPQ, is CEO of the Institute for Neuro & Behavioral Project Management, which he founded with Dr. Jodi Wilson. Josh is also co-author of the NeuralPlan (www.neural-plan.com) NPPQ master planner certification with Dr. Shari De Baets from Belgium, and he is an adjunct professor of project management, with experience that includes project management and project controls, including work at several national laboratories and other projects throughout the U.S. Department of Energy (DOE) complex. He has authored best practices for the DOE Energy Facilities Contractors Group and wrote for other project management periodicals. His doctoral dissertation is titled *Toward a Theory of Behavioral Project Management*. You can view an introduction to Josh and his colleagues' work in Behavioral Project Management at https://youtu.be/miqbagN_4dQ. The future of project management is designing PM methodologies around the beings that predict and deliver projects: humans. You can also listen to some of the podcasts Josh and his colleagues have been featured on, here: Behavioral PM: the Freakonomics Approach to Project Delivery with Dr. Josh Ramirez - <https://pmhappyhour.com/ep077/>; Neuroscience in Project Management - <https://www.pmi.org/chapters/wdc/pmi-resources/pm-podcasts/pm-point-of-view-69>; Tips from Behavioral Science - <https://www.pmi.org/chapters/wdc/pmi-resources/pm-podcasts/pm-point-of-view-95>.



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Darrell Mesa, a Senior Program Planner / Scheduler and a dynamic intrapreneur, with extensive expertise in project management, including program planning, scheduling, and risk management. As a certified Project Management Professional (PMP), he has a demonstrated history of steering large-scale projects to success by applying industry best practices, with special proficiency in Earned Value Management (EVM), Critical Path Schedule Management, and Work Breakdown Structure. His role as a Microsoft Project Practitioner at Denver Corporate Search showcases his ability to develop and update intricate MS Project schedules, adhering to stringent government regulations.

Darrell's professional journey is marked by significant roles that have allowed him to leverage his skills effectively. At Projitz LLC, as a Senior Program Planner / Scheduler, he enhanced project efficiency through meticulous application of Work Breakdown Structure and Critical Path Analysis. As a Senior Integrated Master Scheduler at Highbury Defense Group, he made notable improvements in program efficiencies through the execution of Integrated Master Schedules and the integration of Earned Schedule methodologies. A key achievement in his career was the development of 89 Project E-cademy training courses, which increased team productivity by 10%. In his capacity as a Learning Management Administrator, he demonstrated dedication to knowledge dissemination, using WordPress Tutor LMS to bolster team skills in Project Scheduling using Microsoft Project Professional and Project Web App.

In addition to his corporate roles, he is the founder of Influence IPM LLC, a business focused on Integrated Project Management, where he leverages his vast experience to provide cutting-edge project management solutions. More about his entrepreneurial venture can be found at influenceipm.com. Beyond traditional project management, he is also an active AI Influencer through his YouTube channel ([Restless Minds](#)), where he creates and shares content on AI advancements, fostering a community of tech enthusiasts and professionals keen on the latest in artificial intelligence. Based in Murrieta, California, he is keen on connecting with like-minded professionals and can be reached via email at darrell.mesa@pm-ss.org or through LinkedIn at <https://linkedin.com/in/darrell-mesa-pmp-csm-4bbb8955>.



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Rebecca (Becky) Winston, Esq., JD, PMI Fellow, is a former Chair of the board of the Project Management Institute (PMI®). Becky has over 30 years of experience in program and project management, primarily on programs funded by the US government or their contractors.

Active in PMI since 1993, Rebecca Winston helped pioneer PMI's Specific Interest Groups (SIGs) in the nineties, including the Project Earth and Government SIGs, and was a founder and first co-chair of the Women in Project Management SIG. She served two terms on the PMI board of directors as director at large, Secretary Treasurer, Vice Chair (for two years), and Chair (2002). She was elected a PMI Fellow in 2005. She is also a member of the American Bar Association and the Association of Female Executives in the United States. She currently is the Executive Vice President of the College of Performance Management and the lead for their ISO standards committee given her 25 plus years of ISO experience.

She has served as an advisor to organizations such as the National Nuclear Security Administration (USA), U.S. Department of Energy (DOE) and the U.S. Department of Homeland Security (DHS) on topics ranging from Program and Project Management to project reviews, risk management, vulnerability assessments, software development and artificial intelligence. She served on the Air Force Studies Board for six years and serves the Intelligence Science Technology Engineering Group for the National Academies of Science, Engineering, and Medicine, as well as actively serving on many studies for the National Research Council. She can be contacted at rebeccawinston@yahoo.com