

PRAXIS: A Digital Learning Ecosystem for Upskilling and Reskilling Project Managers in the AI Era

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Abstract—The rapid proliferation of Artificial Intelligence (AI) and emerging technologies has transformed the role and required skillsets of project managers, demanding hybrid competencies that combine technical expertise with advanced soft skills such as leadership, adaptability, and emotional intelligence. However, traditional project management education and certification frameworks remain largely misaligned with these evolving needs, often emphasizing methodological knowledge over experiential and human-centered capabilities. Addressing this gap, the PRAXIS platform initiative introduces a novel digital learning ecosystem for upskilling and reskilling project managers in the AI era. Built on the principles of experiential and project-based learning, PRAXIS integrates academic research, industry practices, and innovation to create a dynamic platform for continuous competence development. Central to the initiative is the PMC BOX, a simulation-based environment offering virtual scenarios, e-hackathons, and collaborative challenges designed to cultivate both AI fluency and essential soft skills. By fostering active learning and cross-community interaction, PRAXIS advances a new paradigm in project management training, equipping professionals to thrive in volatile, uncertain, and AI-driven contexts.

Keywords—*Project Management Education; Artificial Intelligence (AI) in Project Management; Upskilling and Reskilling; Experiential and Project-Based Learning; Digital Learning Ecosystems.*

I. INTRODUCTION

The accelerating pace of digital transformation, driven by Artificial Intelligence (AI) and other emerging technologies, is reshaping the landscape of project management [1]. Contemporary projects are no longer confined to traditional processes of planning, monitoring, and delivery; instead, they unfold in environments characterized by Volatility, Uncertainty, Complexity, and Ambiguity (VUCA) [1, 2]. Within this context, project managers must operate as adaptive leaders, capable of integrating advanced digital tools with human-centered skills to achieve organizational resilience and

strategic alignment [3]. However, while AI promises efficiency gains and informed decision-making, it also requires project managers to acquire new hybrid skillsets that blend technical literacy with emotional intelligence, ethical awareness, and collaborative capacity [4 – 6].

Despite this pressing need, existing project management education and training frameworks remain inadequately aligned with the challenges of the AI era [7 – 9]. Certification-oriented approaches have historically emphasized methodological and technical proficiency [5, 6], yet often fail to sufficiently address the behavioural, cognitive, and adaptive skills that determine real-world project success [7, 8]. Moreover, research indicates a growing gap between industry expectations and the competencies fostered by academic curricula and lifelong training programs [10 – 13]. This misalignment not only hinders the effectiveness of project managers but also increases the risks of project failure, including budget overruns, delivery delays, and reduced value realization [9]. Bridging this gap requires a shift from static, knowledge-based models to dynamic, experiential ecosystems of learning.

To respond to this challenge, the PRAXIS initiative introduces a novel digital learning ecosystem specifically designed to upskill and reskill project managers in the AI era. PRAXIS moves beyond conventional training by combining academic research, industry best practices, and innovation through experiential learning methodologies. Central to its design are interactive simulations, e-hackathons, and collaborative digital challenges, which cultivate both AI fluency and the soft skills essential for hybrid human–AI collaboration. By fostering a vibrant knowledge community that connects project managers, entrepreneurs, and academia, PRAXIS positions itself as a transformative framework that empowers professionals to thrive in complex and technology-driven project environments.

II. STATE OF THE ART : WHY PRAXIS FOR UPSKILLING PROJECT MANAGERS IN AN AI ERA

A. Rising need of highly-skilled Project Managers

A highly-trained and skilful project manager capable to grasp, comprehend and navigating throughout all the dimensions and complexities of current project environments, is a key component of projects' success. Modern projects are characterized of unprecedented scale and complexity as reflected in the conceptual lenses of the VUCA framework or BANİ (Brittle, Anxious, Non-Linear, and Incomprehensible) model both emphasizing that organizations nowadays are navigating into unpredictable markets and unimagined disruptive innovations [1, 2]. The COVID-19 pandemic has further accelerated these dynamics, taking into account as well the rapid proliferation of artificial intelligence, cloud computing and other emerging technologies of Industry 5.0. These transformations require the management of complex transitions involving multiple and diverse stakeholders, working with cross-functional teams around the globe, and deploying significant resource commitments, that lead to a new era of "project governance" [2]. Within such contexts, the continuous upskilling and reskilling of project managers is an imperative rising need. PMs nowadays are the critical leaders who help and enable organizations to adapt, remain competitive, resilient and achieve strategic objectives [3, 4]. The absence of the needed skillset(s) from the PMs, exposes organizations to significant risks, including cost overruns, schedule delays and even failure to deliver the anticipated value [5]. This issue of project failure and its correlation with PMs skillset has been studied for several years now [5]. The research initially focused on technical aspects/factors that influence project's success [5, 6]. For instance, the "Being Lean and Seen" Horizon research project mentioned that "6% of projects are 'completely unsuccessful' and that less than a quarter (22%) of all projects undertaken fully achieve their objectives" [7], due to a persistent skills gap in the profession [2, 8]. In Table I, forefront research-restricted to post-pandemic studies- also highlights the linkages between skillset of PMs and project management success or failure.

TABLE I. FINDINGS ABOUT LINKAGES OF PM'S SKILLS AND FAILURE OF PROJECTS

Source	Findings about linkages of skills PM and failure
Avença, I. et al: (2023). Project Managers Soft Skills Influence in Knowledge Sharing	Strong positive correlation between PM's communication, leadership, problem-solving skills and overall project success. A lack of these soft skills undermines team collaboration and project outcomes.
Thorn, L. (2023). PM Soft Skills and Project Success (thesis)	Lacking a synergy of technical and emotional/human skills contributes to project failure.
Chugh, R. (2024). Soft Skills and Learning Methods for 21st-Century PM (review)	Insufficient focus on these soft skills and active learning methods undermines the success of emerging PM professionals.
Rehan, A. (2025). Leadership Behavioral Practices of Project	Demonstrates that effective leadership behavior in PMs directly affects

Managers	project outcomes. Shows a direct link: poor leadership behaviors (due to lack of skills) lead to lower project success rates.
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Based on this literature review, a rising need for understanding and strengthen the human and organizational capacity building of PMs with emphasis in domains such as leadership, communication, adaptability and learning ethos, is highly appreciated. Research argues that by focusing on human and organizational dimensions of capability-building, organizations can handle the existing gaps in skills that often lead to project failure [8, 9]. There is a need of balance between advanced technical knowledge with the increased and enhanced soft/persons skills needed in the AI-era, as the ongoing literature of the subject argues (Table II).

Furthermore, a strategic alignment of project management competencies with global skillset and occupational classifications, such as ISCO and ESCO, could provide an essential reference framework for defining, standardizing, and benchmarking the evolving portfolios of skills required by project managers. These taxonomies not only facilitate the comparability and recognition of competencies across sectors and countries, but also enhance the design of targeted upskilling and reskilling initiatives, thereby reinforcing the global relevance and transferability of project management capacities. Our research focus then has embarked on particularly how AI has transformed the needed skillset of PMs. As the amount of related literature is massive when searching the general terms, research has focused only in article with the specific terms in title/abstract/key words and then selected the ones by the articles were most relevant. Our synopsis of findings described in next section.

TABLE II. NO OF PUBLICATIONS ON THE TERMS OF AI AND PROJECT MANAGEMENT TRANSFORMATION

Timeframe	Science Direct	Wiley	Scopus
2020-2025	31738 (all words) 13 (title, abstract, key words)	27000 (all words) 50 (title, abstract, key words)	3618 (all words) 31 (title, abstract key words)

Source: Data derived from an author-conducted search with the term "how AI transforms project management skills" on 1 September 2025.

B. Competencies for success in PM AI -Era

With the application of Artificial Intelligence (AI) in Project Management, there is a paradigm shift in how projects are managed, from planning to risk management and decision-making, and from purely human oversight to human-AI collaboration [10 – 13]. AI applications span planning, monitoring, risk management, and performance evaluation, and can be grouped in three levels of assistance:

- in automation i.e., routine tasks [14],
- on support in analysing data or cases,
- on strategy decision making process [13,14].

In [15], the authors' analysis of AI PM landscape shows that AI advancements are here and in all the areas of PM knowledge arguing even more about the forthcoming

advocacy of the needed Hybrid *Project teams* with AI-assistants and human PMs [15]. Still, PM profession is not threatened by AI, but PMs are required to develop or acquire a different set of skills, i.e. a “hybrid skill set” that combines traditional project management expertise with new AI-era competences either focus on technical aspects/ Hard skills of PM but as well as the soft skills of a PM [10 – 16].

In [17], the authors describe the “master project manager” as a leader who operates at the edge of chaos, understands projects as “*Complex Adaptive Systems (CAS), invests in sensemaking activities, builds shared values and vision, and cultivates resilience and self-regulation*”. In this conception, the emotional intelligence (EQ) is a central notion as it helps PMs to influence, to build trust, and adapt to shifting contexts [17].

On the same ground, in [18], the authors developed and validated a project manager skills’ scale that categorizes competencies into technical, managerial, and communication domains. Their findings underscore the importance of a balanced development of these dimensions, as technical proficiency alone is insufficient for effective project delivery [18]. Even more, in [19], the authors argue that emotional intelligence of PMs and the related soft skills i.e. leadership, teamwork, adaptability, and conflict resolution-are indispensable predictors of project success in the 21st century [19].

Obviously, PM skills in the post AI-era, are changing as the everyday tasks of PM are transformed with AI-tools and practices. PMs’ needed skills are different, as now they are not only managed people but also coordinate dynamic and evolving human-AI interactions. PMs should not only be technical savvy, but should be adaptive, ethical leaders and collaborators who give emphasis on values, empathy and willingness to change.

TABLE III. INDICATIVE KEY PM SKILLS IN THE AI ERA

Year	Reference	Skills set of PM
2023	Nieto-Rodriguez, Antonio, and R. Viana Vargas. "How AI will transform project management." Harvard Business Review 2 (2023).	Strategic focus and skills related to value delivery and business alignment Analytical thinking and collaboration Ability to know how to learn
2024	Felicetti, A. M., et al. (2024). Artificial intelligence and project management.	Innovation attitude; task, technology fit; data-informed decisioning; change management
2024	Oyekunle, D. O. T., et al. (2024). PM Competencies in AI-Driven Environments.	Technical knowledge Data-Driven decision making Adaptability and data-driven decision-making

		Collaboration Communication skills
2024	Kearney, J., Bond-Barnard, T., & Chugh, R. (2024). Soft skills and learning methods for 21st-century project management: A review. International Journal of Managing Projects in Business. Advance online publication	Communication, leadership, interpersonal skills, teamwork, emotional intelligence.
2024	Đajić, M. J., Pejić, B., & Mitrović, S. (2024). Developing project manager skills: Development and validation of the project manager skills scale. Frontiers in Psychology, 15, 1173952. https://doi.org/10.3389/fpsyg.2024.1173952	Hybrid skilled sets (technical +human) as human are needed in leading, adapt to new changes Learning mindset, a top meta -skill
2025	Adamantiadou, D. S., et al. (2025). Leveraging AI in Project Management.	Data literacy / model selection and evaluation fluency Forecasting thinking Communication skills Management skills Continuous learning mindset Adaptability
2025	PMI (2025). 7 Essential Skills for AI Project Managers.	Data literacy; critical thinking; trustworthy AI; iterative delivery; stakeholder/change management
2025	Hettrich, Benjamin, Niklas Krings, and Alexander Kock. "Bridging the Expertise Gap: The Role of Generative AI in Supporting Project Planning Tasks for Novices and Professionals." Creativity and Innovation Management (2025).	Critical evaluation & judgment Critical evaluation & judgment Adaptive learning mindset PMs not only in AI tool use but also in meta-skills: critical thinking, ethical use of AI, and hybrid human-AI collaboration.

Based on the analysis of Table III and Table IV, the shifting skills of PM in AI-era could be grouped as:

- technical and digital competences with emphasis on AI literacy skills and tools (prompting, interpreting model outputs, basic stats/ML awareness); and using different tools, data driven decision making [11,20]
- cognitive and strategic mindset, that is being able to adopt an innovation mindset & experimentation approach, to judge and critical evaluate projects and data of AI and endorse strategic foresight (anticipating risks & opportunities with AI) [14]
- Ethics, governance & data compliance (trustworthy AI, privacy, accountability, transparency)
- Emotional Intelligence competences, either related to personal or Interpersonal management (team work,

empathy, relationship management, leadership) [16, 18,19]

- Learning mindset and adaptability [18, 21].

Together these form the core human-AI collaboration capability that the sources repeatedly highlight as decisive for PM effectiveness in the years to come.

TABLE IV. PM MANAGERS' SKILLS: BEFORE AND AFTER AI ERA

PM Managers' Skills	Before AI	Now
Digital & Technical	Basic IT literacy; digital tools for scheduling and reporting	AI fluency; ability to work with data; evaluate AI insights;
Cognitive & Strategic	Systems thinking and problem-solving supported by manual data; static forecasting	Strategic foresight; scenario building; critical evaluation of AI outputs; judgment under uncertainty
Interpersonal & Leadership	Directive leadership; task assignment and monitoring; compliance focus	Collaborative leadership; empathy; cross-functional trust; Hybrid teams enabling human-AI teamwork; resilience building
Ethical & Governance	Governance focused on time, cost, quality, compliance with standards	Responsible AI governance; addressing bias and fairness; ensuring transparency and accountability; navigating ethical risks
Learning & Adaptability	Certifications and static knowledge frameworks (e.g., PMBOK, PRINCE2)	Continuous learning mindset; upskilling in AI/digital tools; adaptability, curiosity

C. A need of shift in training skillful Project managers in an AI era

The literature review not only reveals the needed transformation of skills sets for effective PMs, but also the needed shift in training. Actually, a misalignment between industry expectations and forthcoming needs with the academic curricula and life-long training programs of project managers exists [21, 22]. Traditional curricula even in the PMBOK® Guide and the relative certification frameworks tend, at least in the past, to produce “technical executors” rather than professionals capable of navigating and leading the dynamic, volatile environment of a Project. References [21] and [22] shows that while universities provide adequate technical knowledge related to Project Management, they fail to develop soft skills required in real project contexts. Similarly, in [26], the authors, through their bibliometric analysis of 435 documents published in the period from 1985 to August 2023, consent that within the landscape of project management education and training (PMET) technical competencies’ have prevailed over soft and behavioural capabilities’ training. There is obviously a shift after 2009, but the research and discourse or the needed shift in PMET is on its infancy.

According to Skills outlook of World Economic Forum (2025), analytical thinking, resilience, collaboration, and self-

management are among the fastest growing core skills needed in the workforce up to 2030 [23]. Unlike hard skills which can be acquired through courses, education and practice, soft skills are hard to obtain. Simply, knowing about them, is not the same as being able to apply them, i.e. as they are behavioural and context-dependent [24]. This difference makes soft skills training unique and difficult [22 – 24], as it requires practice, reflection, personal engagement rather than traditional classroom activities and requires the company’s engagement in the training process as well [23]. In [22], the authors show that while universities provide adequate technical knowledge related to Project Management, they fail to develop soft skills required in real project contexts. A Project-based learning (PBL) emerges as a powerful methodology for bridging theory and practice and involving all stakeholders in the PMET [25, 26]. Learning is increasingly recognized as extending beyond academic programs with organisations invest heavily in continuous upskilling-estimated at 50% of the working year-highlighting the importance of designing learning in the flow of work [23]. Studies such as in [27], highlight that PBL with authentic clients allows students/trainers to rotate through project roles, negotiate, prepare communication plans, and reflect systematically, thereby fostering metacognitive skills and professional identity [27].

This experiential and project-based learning, can simulate real project environments and encourage teamwork, communication, problem solving, and adaptability [28]. Still, and in spite of the validity of these approaches, Generation Z, may require different-close to their traits learning environment. Generation Z, the new cohorts of PMs are tech savvy, digital natives having born and grow up in technology, but are weaker in interpersonal and communication skills, less aware of individualism, and less emotional self-controlled, which may hinder their effectiveness in high-pressure project environments.

Games, hackathons and similar immersive formats offer a unique context in which Generation Z learners could rapidly adapt, coordinate, and deliver under tight constraints, making them a promising complementary approach for cultivating soft skills in project management education [24, 25].

For PMET, this implies a shift from static certification-driven models to dynamic, learning-oriented frameworks that prepare future project managers to coordinate evolving human-AI interactions while maintaining a strong human-centric orientation.

III. INTRODUCING PRAXIS: A NOVEL APPROACH

The state-of-the-art review demonstrates that while project management has gained unprecedented strategic significance, the profession continues to suffer from persistent skills shortages and competence gaps. Traditional models of training and certification, though valuable, are insufficient to meet the evolving demands of organizations operating in VUCA environments. In this context, the PRAXIS initiative (<https://praxisproject.gr/>), is built on the recognition that effective project management requires more than

methodological knowledge; it demands the integration of research, experiential learning, and innovation. Its mission is to create a learning ecosystem that bridges the gap between academia, industry, and professional practice, equipping project managers, with the hybrid competencies needed for the 21st century.

The name itself – derived from the Greek word “πρᾶξις” (praxis, meaning “practice” or “action”) – underscores the initiative’s emphasis on applied knowledge. PRAXIS positions itself not merely as a training program, but as a platform for continuous competence development, experimentation, and knowledge exchange. In Greece, there is a noticeable training gap in PMET, as both the AI- and soft skills-related initiatives, are not permanent and are limited [30]. For instance, Microsoft’s Regeneration Initiative and the training provided by the Institute of Industrial Management and Entrepreneurship (IBEPE), which is the educational arm of the Hellenic Federation of Enterprises (SEV), offer only few lifelong learning programs on topics such as artificial intelligence and the digital transformation process (IBEPE - SEV). Taking into account the existing gap in the Greek business community, as well as the emerging trends and opportunities for the project manager profession, the main subject of PRAXIS is to explore the role of AI-skills in PMs, to map the training gaps and training needs of the next generation of PMs based on the conceptual and methodological approach about human-AI interaction, and to create an innovative virtual knowledge community for PM and AI.

The pioneering simulation platform for training project management executives, will offer project managers the opportunity to practice dealing with real and complex project management scenarios and to understand the benefits/risks of integrating artificial intelligence (AI) into their work, but also experience the needed soft skills. This simulation platform will encourage active learning through the exploration of new techniques and the exploitation of their existing knowledge of PMs in action by connecting three different communities - groups of individuals (project managers, entrepreneurs, start-up entrepreneurs, and the academic community) (Fig. 2).

A key innovation of the project is the Project Management Challenge box – PMC BOX platform, currently at developing phase with virtual learning scenarios compatible with adult training needs, e-hackathons, and virtual “battles”. In particular, the platform incorporates the following modules (Fig. 3):

- **Learning Scenarios Module:** It provides virtual, adult-learning-oriented scenarios tailored to professional upskilling needs, including realistic project simulations in which participants assume roles, make time-bound decisions, and experience the consequences of their choices.
- **E-Hackathons Module:** It hosts virtual hackathons where teams of project managers collaborate within short timeframes to solve domain-specific challenges, cultivating collaboration, creativity, and rapid decision-making under constraints.

- **Virtual Battles Module:** It delivers competitive, scenario-based “battles” in which teams are benchmarked against each other in real time, strengthening strategic thinking, leadership under pressure, communication, and crisis management.
- **Community & Co-Creation Module:** It connects diverse communities (project managers, entrepreneurs, academia) for ongoing knowledge exchange, providing a shared space for co-authoring content (scenarios, templates, rubrics) and structured feedback.
- **Assessment & Feedback Module:** It aggregates outcomes from scenarios, hackathons, and battles to produce evidence of learning, offering individual and team-level feedback that addresses both technical competences and soft-skill development.

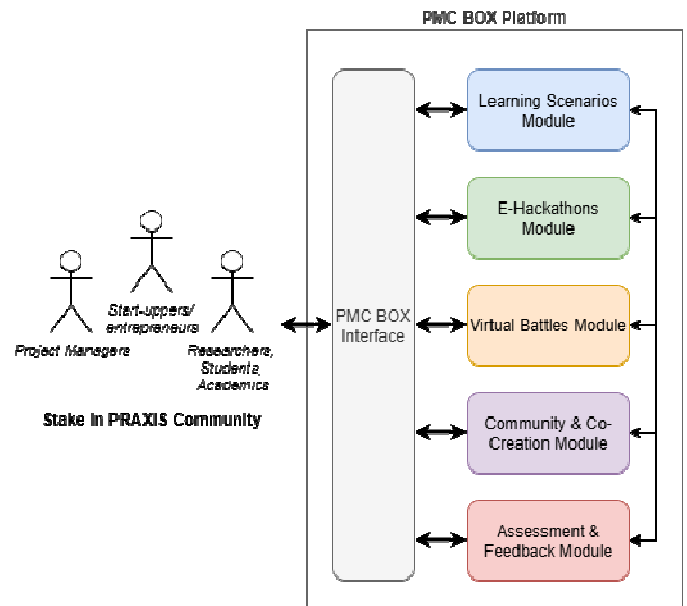


Fig. 1. PRAXIS: A Digital Learning Ecosystem

This platform is built, following a co-creation methodology process where research and content will be created and tested via participation of the Stake in PRAXIS Community. As such, interaction between different groups, different generations and user levels, will take place. PRAXIS process is hinder for several limits related to Greece’s informal learning environment and participation ethos (low awareness, limited motivation etc.) [31]. But what is more challenging is this interaction online of different generations, skills and backgrounds and how the resist in collaborate or compete to innovative methods such as e-hackathons and virtual battles.

IV. CONCLUSIONS

The rapid integration of Artificial Intelligence (AI) in project management underscores the urgent need for hybrid skillsets that merge technical expertise with soft skills such as leadership, adaptability, and emotional intelligence.

Traditional training and certification models remain misaligned with these demands, often neglecting the behavioral and adaptive capacities critical for project success. PRAXIS addresses this gap by offering an experiential, digital learning ecosystem that develops both AI fluency and human-centered skills through simulations, hackathons, and collaborative challenges. Equipping project managers with these hybrid competencies is essential to ensure resilience, innovation, and success in complex, uncertain, and technology-driven environments. Future work will focus on evaluating the platform in real training contexts, examining its effectiveness in enhancing hybrid competencies, measuring learning outcomes, and validating its impact on employability. Pilot studies with diverse user groups will inform iterative improvements and ensure PRAXIS evolves as a sustainable and scalable framework for project management education in the AI era.

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