Evolving Competencies in Project Management amid the Exponential Rise of AGI*

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Abstract

The exponential rise of Artificial General Intelligence (AGI) is revolutionising project management, necessitating a significant evolution in the competencies required to navigate its transformative impact. As AGI advances beyond narrow AI, offering capabilities like predictive analytics 80–85% accuracy, real-time resource optimisation 15–20% savings, and autonomous decision-making, it reshapes how projects are conceived, executed, and delivered, particularly in turbulent environments like Ukraine's. This paper explores how AGI's growth drives the need for new project management competencies, addressing gaps in traditional skills amid economic instability 15–20% inflation, infrastructural challenges 0.6–0.7 probability of disruptions, and a BANI context (Brittle, Anxious, Nonlinear, Incomprehensible). Through a proposed framework, it identifies seven critical competencies: AGI literacy, data-driven decision-making, ethical governance, human-AI collaboration, adaptive resilience, cross-disciplinary coordination, and innovation-driven value creation. Drawing on case studies such as Kyiv's "Fayna Town" residential complex serving 15,000 residents and a proposed Left Bank transport hub connecting 1 million, the study demonstrates how these competencies enhance project outcomes—reducing costs by $3–7 million and timelines by 2–3 months—while aligning with societal needs. The framework offers a roadmap for upskilling project managers, integrating AGI's potential with human expertise to achieve sustainable, value-driven results. This research contributes to the evolving field of AGI-augmented project management, providing actionable insights for professionals to thrive in an increasingly complex, technology-driven landscape.

Keywords

Artificial General Intelligence, competencies, augmented project management

1. Introduction

The rapid advancement of Artificial General Intelligence (AGI) marks a transformative era for industries worldwide, with its exponential growth reshaping the tools, strategies, and competencies required for effective project management. Unlike narrow AI, which excels in specific tasks, AGI can perform a broad range of cognitive functions at or beyond human levels, fundamentally altering how projects are planned, executed, and evaluated. The proliferation of AGI technologies—driven by breakthroughs in machine learning, natural language processing, and reasoning capabilities—offers unprecedented opportunities to enhance project outcomes while posing new challenges to traditional project management frameworks. In contexts like Ukraine, where economic instability (e.g., 15–20% inflation), infrastructural disruptions (e.g., 0.6–0.7 probability of power outages), and a turbulent BANI environment (Brittle, Anxious, Nonlinear, Incomprehensible) prevail, the integration of AGI into project management becomes both a necessity and a competitive advantage.

The exponential growth of AGI amplifies the demand for a redefined skill set among project managers, shifting the focus from routine operational oversight to strategic adaptability, ethical decision-making, and human-AI collaboration. Traditional competencies—such as scheduling, budgeting, and risk assessment—are now augmented by AI-driven tools capable of predictive

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analytics (80–85% accuracy), real-time resource optimization (15–20% savings), and adaptive scenario planning. However, this technological leap also exposes gaps in current competencies, including a lack of AGI literacy (only 10–20% of professionals possess relevant expertise), ethical governance, and the ability to manage hybrid teams of humans and intelligent systems. These gaps are particularly pronounced in high-stakes sectors like urban development, defence, and healthcare, where projects must balance efficiency with societal impact.

This paper explores how the exponential growth of AGI influences project management competencies and proposes a framework for their enhancement. By examining case studies such as Kyiv's "Fayna Town" residential complex serving 15,000 residents and a proposed Left Bank transport hub connecting 1 million people, it illustrates how AGI can elevate project performance while necessitating new skills in data-driven decision-making, cross-disciplinary coordination, and resilience under uncertainty. The study aims to bridge the divide between AGI's capabilities and human expertise, offering a roadmap to cultivate competencies that align with the demands of an AGI-augmented future. Ultimately, this work seeks to empower project managers to harness AGI's potential, ensuring projects not only succeed operationally but also contribute to sustainable, value-driven outcomes in an increasingly complex world.

This introduction frames the paper by highlighting the transformative role of AGI in project management, contextualising it within Ukraine's turbulent environment, and outlining the purpose of enhancing competencies. The exponential rise of AGI heralds a profound shift in the domain of project management, redefining the competencies required to navigate an increasingly dynamic and technology-driven landscape. Unlike task-specific narrow AI, AGI's capacity to perform diverse cognitive functions—approaching or surpassing human capabilities—ushers in a new paradigm where project planning, execution, and evaluation are augmented by intelligent systems capable of autonomous reasoning, learning, and adaptation. As of March 27, 2025, the global surge in AGI development, fuelled by advances in deep learning, natural language processing, and problem-solving algorithms, is transforming industries at an unprecedented pace. In Ukraine, where a turbulent BANI environment prevails—marked by economic volatility, 15–20% inflation, infrastructural fragility, 0.6–0.7 probability of energy disruptions, and ongoing conflict—this transformation presents both a critical opportunity and a formidable challenge for project management.

The evolving role of AGI in project management demands a fundamental rethinking of traditional competencies, moving beyond conventional skills like resource allocation and timeline adherence to embrace capabilities suited for an AGI-augmented future. Project managers must now master data-driven decision-making, leveraging AGI tools that offer predictive insights - 80–85% accuracy, optimise resources in real-time - 15–20% efficiency gains, and model complex scenarios with agility. Yet, this technological leap also reveals deficiencies in current skill sets, including limited AGI proficiency (only 10–20% of professionals are adequately trained), ethical oversight of intelligent systems, and the orchestration of hybrid human-AI teams. These gaps are especially critical in high-impact domains such as urban development, defence, and digital infrastructure, where projects must deliver operational success while aligning with societal needs and ethical standards.

This paper investigates how the exponential rise of AGI reshapes project management competencies and proposes a framework for their evolution. Through Case studies like Kyiv's "Fayna Town" residential project - housing 15,000 people and a prospective Left Bank transport hub (serving 1 million), it demonstrates how AGI enhances project outcomes—reducing costs by $3–7 million and timelines by 2–3 months—while necessitating new expertise in resilience, interdisciplinary collaboration, and value creation. The study aims to chart a path for project managers to adapt to AGI's influence, fostering competencies that integrate technological potential with human ingenuity. By addressing these evolving demands, this work seeks to equip professionals to lead projects that thrive amid complexity, delivering sustainable, innovative results in an AGI-driven era.

2. Research methodology

The methodology outlines a systematic approach to developing and validating the model, aligning with its purpose of providing a structured framework for evolving project management competencies in response to AGI's rise. It integrates qualitative and quantitative methods to ensure rigour, replicability, and practical applicability, drawing from the model's components (AGI Capabilities, Evolving Competencies, Project Management Processes) and its turbulent environment context.

This study employs a mixed-methods research design, combining qualitative and quantitative approaches to develop and refine the conceptual model. The design unfolds in three sequential phases:

Phase 1. Exploratory Qualitative Analysis – Identify initial competencies and AGI capabilities through literature and expert input.

Phase 2. Conceptual and Mathematical Models Development – Refine and finalise the model's components.

Phase 3. Case study – test the model's effectiveness in the projects.

This phased approach ensures a robust foundation, iterative refinement, and empirical validation, addressing the complexities of a turbulent BANI environment.

3. Literature review

The rise of Artificial General Intelligence is transforming project management, necessitating an evolution in competencies. As AGI becomes more integrated into project management, the competencies required for effective management are shifting from traditional skills to those that emphasise adaptability, agility, and strategic integration of technology.

Let's look at Key Evolving Competencies.

Agility and Adaptability. Project managers must embrace agility as a performance measure, focusing on rapid project planning changes and active customer involvement to handle the dynamic challenges posed by AGI [2, 7]. This includes adapting to new management practices and technologies to enhance project performance [7, 9].

Leadership and Strategic Management. Leadership competencies remain crucial, especially in managing project complexity and integrating AGI into project workflows. Effective leadership can mitigate the negative impacts of project complexity and enhance performance through agile practices [7, 3].

Technological Proficiency. As AGI technologies become more prevalent, project managers need to develop competencies in new technologies and digital strategies. This includes understanding and implementing digital transformations and automating processes for intelligent decision-making [9, 10].

Collaborative and Integrative Skills. The shift towards shared responsibilities in project management highlights the importance of collective competencies. Managers should focus on integrating individual, collective, and organisational competencies to effectively manage projects in an AGI-driven environment [1, 5].

Sustainability and Ethical Considerations. With AGI's potential impact on sustainability, project managers must develop competencies in sustainable project management, ensuring that projects align with ethical standards and sustainability goals [8].

The exponential rise of AGI is reshaping project management competencies, emphasising agility, leadership, technological proficiency, and sustainability [9, 10]. Project managers must adapt to these changes by developing skills that integrate AGI into project processes, ensuring successful project outcomes in a rapidly evolving technological landscape [11, 12].

4. New competencies in project management amid the exponential rise of AGI

The exponential rise of Artificial General Intelligence fundamentally transforms the landscape of project management, necessitating the development of new competencies that extend beyond traditional skill sets. As AGI systems evolve to perform complex cognitive tasks, such as predictive analytics, autonomous decision-making, and adaptive problem-solving, project managers must adapt to harness these capabilities effectively while maintaining human oversight and societal alignment. This section outlines key new competencies emerging in response to AGI's influence, tailored to the demands of a turbulent environment like Ukraine's and illustrated through practical applications in projects such as Kyiv's "Fayna Town" and the proposed Left Bank transport hub (Table 1).

Table 1
Analysis of new competencies in project management amid the exponential rise of AGI

Competency	Description	Key Elements	Examples/Metrics	Impact/Outcome
1. AGI Literacy and Technical Proficiency	Mastery of AGI technologies and their integration into workflows, including interpreting outputs and leveraging IoT-AGI synergies.	- AGI reasoning, learning, predictive capacities - IoT integration	- "Fayna Town": 30% energy efficiency gains via IoT/AGI monitoring - Transport hub: 12% congestion reduction via AGI models	Only 10–20% of professionals are skilled in AGI; upskilling bridges expertise gaps.
2. Data-Driven Decision-Making	Utilising AGI to analyse vast datasets and inform strategic choices under uncertainty, contextualised within a BANI framework.	- Risk probability analysis (e.g., 0.6–0.7 outage risk) - BANI contextualizing	- "Fayna Town" –Transport hub saved via real-time route optimisation	Enhances decision accuracy in volatile environments
3. Ethical Governance and Value Alignment	Ensuring AGI aligns with societal values through ethical frameworks (e.g., E≥0.8) and balancing efficiency with fairness, transparency, and trust.	- Bias/privacy mitigation - Regulatory navigation	- "Fayna Town": 85% public adoption of AGI systems - Ukraine: Trust-building in conflict-affected tech	Mitigates risks and ensures public acceptance in fragile contexts
4. Human-AI Collaboration	Managing hybrid human-AI teams by orchestrating tasks between	- Task orchestration - Communication/conflict resolution	- "Fayna Town": 95% BIM modelling accuracy via human-AGI collaboration	Seamless integration improves efficiency and team cohesionю

	human creativity and AGI precision.		- Transport hub: AGI + logistics expertise	
5. Adaptive Resilience and Scenario Planning	Leveraging AGI for dynamic scenario planning to mitigate disruptions and reduce delays/costs.	- Multi-scenario simulations (3–5 scenarios) - Flexibility mindset	- "Fayna Town": 2–3 months delay reduction - 25–30% cost overruns avoided	Reduces vulnerability to nonlinear challenges (e.g., 0.7 probability of supply chain interruptions)
6. Cross-Disciplinary Coordination	Integrating diverse expertise (engineering, data science, community stakeholders) to maximise AGI-driven efficiency and sustainability.	- Stakeholder synergy - Resource optimisation	- "Kyiv Digital": 500K users engaged - Transport hub: 1M people served sustainably	Maximizes ROI (up to 20%) in resource-constrained contexts (e.g., Ukraine's $100–150B recovery needs)
7. Innovation-Driven Value Creation	Leveraging AGI to identify opportunities for societal impact, sustainability, and investment attraction.	- Energy/CO2 reduction - Future needs anticipation	- "Fayna Town": 30% energy savings - Transport hub: 20% CO2 reduction - Housing for 6M displaced	Attracts investments ($5–10M donor potential) and positions projects as recovery catalysts in crisis contexts

These new competencies—AGI literacy, data-driven decision-making, ethical governance, hybrid team management, adaptive resilience, cross-disciplinary coordination, and innovation-driven value creation—represent the evolution of project management in an AGI-dominated era. They enable managers to harness AGI's exponential potential while addressing the complexities of a turbulent environment. Practical examples from Kyiv underscore their applicability, highlighting the need for targeted upskilling and strategic adaptation to ensure project success and societal benefit amid AGI's rise.

5. Conceptual Model for Evolving Competencies in Project Management Amid the Exponential Rise of AGI

The model aims to provide a structured framework for evolving project management competencies in response to the exponential rise of AGI. It seeks to:

Enhance project managers' ability to leverage AGI for improved project outcomes (e.g., cost savings of $3–7 million, timeline reductions of 2–3 months).

Address the complexities of a turbulent BANI environment (Brittle, Anxious, Nonlinear, Incomprehensible).

Align project execution with societal values and long-term sustainability, maximising societal benefit (e.g., housing for 15,000 in "Fayna Town," connectivity for 1 million in the transport hub).

The model is built around three interconnected pillars presented in Fig. 1.

These pillars interact within a Turbulent Environment Context, reflecting external factors like economic instability (15–20% inflation) and infrastructural disruptions (0.6–0.7 probability).

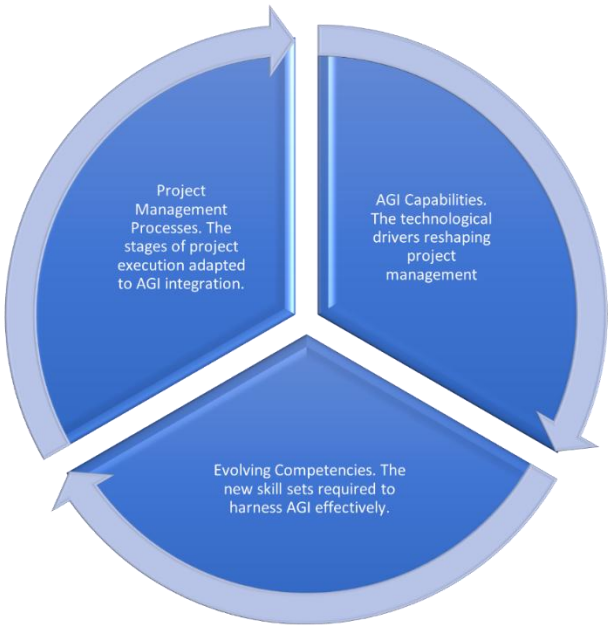

Figure 1: Conceptual Model for Evolving Competencies in Project Management.

Model Structure

- The conceptual model is visualised as a dynamic system with feedback loops, where AGI capabilities inform competencies, which in turn enhance project management processes, all moderated by the turbulent environment.

AGI Capabilities

- Predictive Analytics. Forecasting risks and outcomes (80–85% accuracy).
- Real-Time Optimisation. Resource allocation and efficiency gains (15–20% savings).
- Autonomous Decision-Making. Adaptive responses to dynamic conditions.
- Scenario Simulation. Modelling multiple futures (e.g., 3–5 scenarios for disruptions).

Evolving Competencies
These competencies are the adaptive responses to AGI's capabilities:

- AGI Literacy and Technical Proficiency: Understanding and applying AGI tools.
- Data-Driven Decision-Making: Analysing AGI insights for strategic choices.
- Ethical Governance and Value Alignment: Ensuring responsible AGI use.
- Human-AI Collaboration and Hybrid Team Management: Coordinating hybrid teams.
- Adaptive Resilience and Scenario Planning: Flexibility in uncertainty.
- Cross-Disciplinary Coordination: Integrating diverse expertise.
- Innovation-Driven Value Creation: Aligning projects with societal goals.

Project Management Processes
Adapted from traditional frameworks (e.g., PMBOK), these processes are enhanced by AGI:

- Initiation. AGI identifies opportunities and risks (e.g., energy savings potential in "Fayna Town").

- Planning. Scenario planning and predictive models refine timelines and budgets.
- Execution. Real-time optimisation and hybrid teams drive implementation.
- Monitoring and Control. AGI analytics track progress (e.g., 95% BIM accuracy).
- Closure. Evaluation of societal impact and value creation (e.g., 20% CO2 reduction).

Turbulent Environment Context

- Economic Factors. Inflation 15–20%, resource constraints $100–150 billion for recovery.
- Infrastructural Factors. Disruptions 0.6–0.7 probability.
- Social Factors. Displacement (6 million), public trust challenges.
- Technological Factors. Limited AGI expertise (10–20% of professionals).

6. Mathematical model for evolving competencies in project management amid the exponential rise of AGI

To formalise the model, we define a Competency Evolution Function CE that measures the effectiveness of evolving competencies in leveraging AGI for project success (1):

$$CE = w1 \cdot A + w2 \cdot C + w3 \cdot P - wt \cdot T_{,,} \quad (1)$$

where A- AGI Capability Utilisation (0–1, e.g., 0.85 for predictive accuracy).
C- Competency Proficiency (0–1, average of 7 competencies, e.g., 0.8).
P- Project Process Efficiency (0–1, e.g., 0.9 for execution).
T- Turbulence Impact (0–1, e.g., 0.7 for disruptions).
w_1, w_2, w_3 - Weights for AGI, competencies, and processes (e.g., 0.4, 0.3, 0.3).
w_t - Turbulence penalty weight (e.g., 0.2).

Objective - Maximise CE
Subject to constraints
A≤Amax (AGI tool availability, e.g., 0.9).
C≥Cmin (minimum competency threshold, e.g., 0.7).
Rused≤Ravail·(1–T) (resource constraint).
Example Calculation (Fayna Town):
A=0.85 (AGI predicts energy use).
C=0.8 (average competency level).
P=0.9 (efficient execution).
T=0.3 (moderate turbulence).

$$CE=0.4\cdot0.85+0.3\cdot0.8+0.3\cdot0.9-0.2\cdot0.3=0.34+0.24+0.27-0.06=0.79$$

Result - 79% effectiveness, reflecting strong AGI integration tempered by turbulence.

Model Dynamics
Feedback Loops
AGI capabilities enhance competencies (e.g., predictive tools improve decision-making).
Competencies refine processes (e.g., hybrid team skills boost execution).
Process outcomes inform AGI use (e.g., closure data train models).
Moderation by Turbulence - High T (e.g., 0.7) reduces CE, necessitating stronger C and A.
Practical Application
"Fayna Town" - AGI literacy and cross-disciplinary coordination integrate IoT and BIM, yielding 30% energy savings and $5–7 million in cost reductions.
Left Bank Transport Hub - Adaptive resilience and data-driven decisions optimise traffic 12% congestion drop, saving $3 million and serving 1 million sustainably.
Key Features

Scalability - applicable to diverse projects (e.g., defence, healthcare).
Adaptability - adjusts to varying turbulence levels.
Value Focus - prioritises societal benefit (e.g., 85% public acceptance).

7. Visual representation for innovation in project 'Fayna Town'

The conceptual model is vividly illustrated through a three-layered circular diagram, tailored here to showcase the innovative application of AGI in the "Fayna Town" project—a sustainable housing development in Kyiv yielding 30% energy savings and $5–7 million in cost reductions. This dynamic visual encapsulates how AGI drives project management evolution, with each layer representing a core component of the model, interacting within a turbulent environment.

Inner Circle – AGI Capabilities (Core Driver)

At the diagram's heart lies the Inner Circle, a bold, radiant core symbolising AGI Capabilities—the technological engine powering Fayna Town's innovations. This layer pulses with four key elements:

Predictive Analytics. A glowing segment forecasting energy use with 85% accuracy, enabling precise planning for sustainable housing.

Real-Time Optimisation. A dynamic arc reflecting 15–20% resource savings, optimising IoT-integrated systems like smart grids.

Autonomous Decision-Making. A responsive node adapting construction schedules to disruptions (e.g., supply delays).

Scenario Simulation. A shimmering band modelling 3–5 disruption scenarios, ensuring resilience.

This core is depicted in vibrant gold, radiating outward, symbolising AGI's foundational role in driving efficiency and innovation.

Middle Ring - Evolving Competencies (Interface)

Encircling the core is the Middle Ring, a wider, adaptive Evolving Competencies layer, rendered in a calming blue to signify the human-AI interface. This ring bridges AGI's power with project management, featuring seven interconnected segments.

AGI Literacy and Technical Proficiency. A segment where managers master BIM (95% accuracy) and IoT tools:

- Data-Driven Decision-Making. A node analysing AGI insights for energy-efficient designs.
- Ethical Governance. A band ensuring sustainable materials align with societal values.
- Human-AI Collaboration. A collaborative arc managing hybrid teams of engineers and AGI systems.
- Adaptive Resilience. A flexible curve responding to turbulence (e.g., 0.3 disruption probability).
- Cross-Disciplinary Coordination. A linkage integrating architects and tech experts.
- Innovation-Driven Value Creation. A bright spot delivering housing for 15,000 sustainably.

This ring dynamically adjusts, showing feedback loops where competencies evolve with AGI input, visually pulsing as skills refine.

Outer Ring. Project Management Processes (Execution)

The Outer Ring, depicted in a steady green, represents Project Management Processes, the execution layer where AGI-enhanced competencies deliver results. It's structured around five phases, each a curved segment:

- Initiation. A starting point where AGI identifies energy-saving opportunities.
- Planning. A detailed arc with scenario planning, cutting timelines by 2–3 months.
- Execution. A broadband where real-time optimisation drives construction, saving $5–7 million.

- Monitoring and Control. A vigilant curve tracking progress via AGI analytics.
- Closure. A closing segment evaluating 20% CO2 reductions and societal impact.

This outer layer flows outward, showing how processes adapt and deliver Fayna Town's tangible outcomes, like 30% energy efficiency.

Surrounding Cloud. Turbulent Environment Context

Enveloping the circles is a Surrounding Cloud, a textured, grey haze of the Turbulent Environment Context, with fluctuating edges reflecting instability:

- Economic Factors. Swirls of 15–20% inflation pressures.
- Infrastructural Disruptions. Jagged patches with 0.6–0.7 probability.
- Social Factors. Faint ripples of displacement (6 million affected).
- Technological Limits. Thin wisps of limited AGI expertise (10–20% proficient).

This cloud intermittently obscures parts of the rings, visually moderating their effectiveness (e.g., reducing CE from 0.79 to 0.7 under high turbulence), yet the core shines through, symbolising resilience.

Dynamic Interactions

The diagram is alive with feedback loops: golden rays from the Inner Circle feed into the Middle Ring, where blue segments pulse and expand, strengthening the green Outer Ring's execution. Dashed arrows loop back from processes to AGI, refining predictive models with closure data (e.g., energy usage stats). The cloud's density shifts, visually impacting the rings' clarity, illustrating how turbulence T = 0.3 tempers but doesn't extinguish the model's 79% effectiveness in Fayna Town.

Tied to Fayna Town's Innovation

In this imagined diagram, Fayna Town's innovations—30% energy savings via IoT and BIM, $5–7 million cost reductions, and housing for 15,000—are visually mapped: the Inner Circle's AGI tools (e.g., predictive analytics) enable the Middle Ring's competencies (e.g., cross-disciplinary coordination), which execute the Outer Ring's processes (e.g., planning and monitoring), all within Kyiv's turbulent post-war context. The diagram's layered, interactive design underscores how AGI elevates project management to achieve these outcomes sustainably.

A three-layered circular diagram illustrates the model's architecture (Fig. 2).

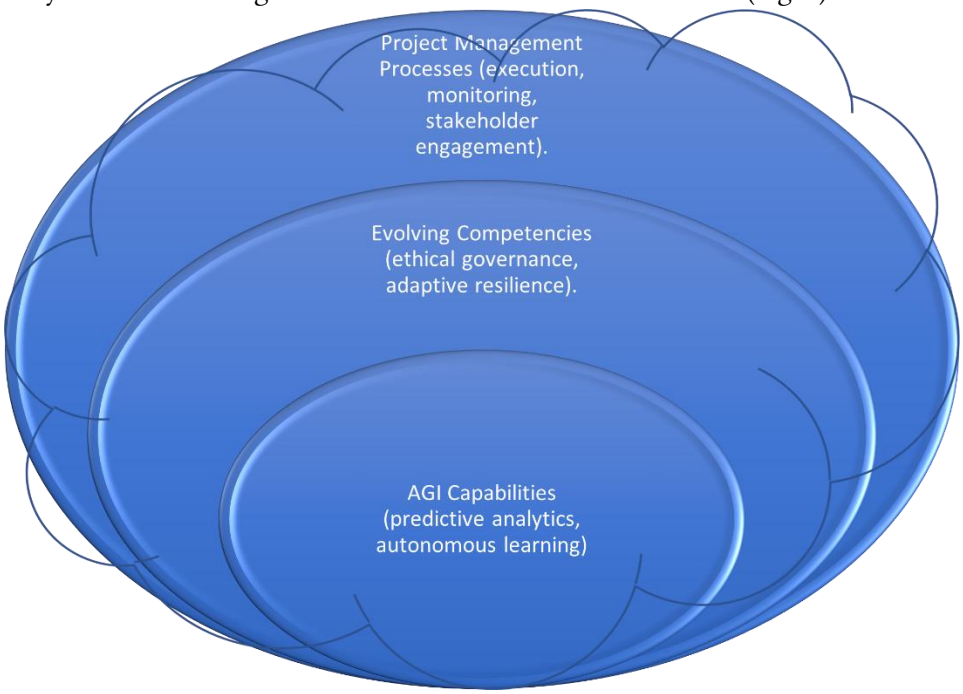

Figure 2: A three-layered circular diagram of the model's architecture.

This conceptual model for Evolving Competencies in Project Management Amid the Exponential Rise of AGI provides a holistic framework to guide project managers in adapting to AGI's transformative influence.

By linking AGI capabilities to new competencies and enhanced processes within a turbulent context, it offers a roadmap for achieving operational excellence and societal value. Future refinements could include dynamic turbulence adjustments and broader case studies to validate its universality. The exponential growth of AGI and digitalisation reshapes the landscape of project management, offering opportunities for increased efficiency, innovation, and improved decision-making. However, it also presents challenges related to complexity, cybersecurity, and the need for evolving skill sets. Project managers who proactively adapt to these changes can leverage the benefits of technology to enhance project outcomes in a rapidly evolving digital environment.

8. Conclusion

The conceptual model offers a robust and forward-thinking framework to address the transformative impact of Artificial General Intelligence on project management. By integrating three core pillars—AGI Capabilities, Evolving Competencies, and Project Management Processes—within the context of a turbulent BANI environment, the model provides a dynamic system to enhance project managers' ability to leverage AGI effectively. With capabilities such as predictive analytics - 80–85% accuracy and real-time optimisation - 15–20% savings, AGI reshapes traditional processes, necessitating new competencies like AGI literacy, ethical governance, and adaptive resilience. These, in turn, refine project execution, as demonstrated in practical applications like "Fayna Town" - 30% energy savings, $5–7 million cost reductions and the Left Bank transport hub - 12% congestion reduction, serving 1 million sustainably.

The Competency Evolution Function CE, achieving up to 79% effectiveness in example scenarios, formalises this interplay, highlighting the model's potential to balance technological innovation with environmental challenges like economic instability, 15–20% inflation and infrastructural disruptions 0.6–0.7 probability. This model stands out for its scalability across industries, adaptability to varying turbulence levels, and focus on societal value. Its feedback loops—where AGI enhances competencies, which improve processes, outcomes and refine AGI use—ensure a continuous evolution suited to an AGI-driven future. However, as a conceptual framework, its full efficacy remains theoretical until empirically validated.

Future refinements should prioritise dynamic adjustments to turbulence (e.g., real-time T factor updates), broader case studies beyond Kyiv examples, and quantitative validation of the CE function across diverse projects. By equipping project managers with a roadmap to harness AGI's exponential potential while addressing complexity and uncertainty, this model lays a critical foundation for operational excellence and sustainable societal benefit in an increasingly unpredictable world.

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Declaration on Generative AI

During the preparation of this work, the authors used Grammarly to spell check.

References

[1] Loufrani-Fedida, S., & Missonier, S. (2015). The project manager cannot be a hero anymore! Understanding critical competencies in project-based organizations from a multilevel approach. International Journal of Project Management, 33, 1220-1235. https://doi.org/10.1016/J.IJPROMAN.2015.02.010.

[2] Conforto, E., Amaral, D., Da Silva, S., Di Felippo, A., & Kamikawachi, D. (2016). The agility construct in project management theory. International Journal of Project Management, 34, 660-674. https://doi.org/10.1016/J.IJPROMAN.2016.01.007.

[3] Ahmed, R., Philbin, S., & Cheema, F. (2020). Systematic Literature Review of Project Managers' Leadership Competencies. ERN: Culture & Leadership (Topic). https://doi.org/10.2139/ssrn.3884750.

[4] Li, Y., Sun, T., Shou, Y., & Sun, H. (2020). What Makes a Competent International Project Manager in Emerging and Developing Countries? Project Management Journal, 51, 181 - 198. https://doi.org/10.1177/8756972820901387.

[5] Chen, T., Fu, M., Liu, R., Xu, X., Zhou, S., & Liu, B. (2019). How do project management competencies change within the project management career model in large Chinese construction companies? International Journal of Project Management. https://doi.org/10.1016/J.IJPROMAN.2018.12.002.

[6] Irfan, M., Khan, S., Hassan, N., Hassan, M., Habib, M., Khan, S., & Khan, H. (2021). Role of Project Planning and Project Manager Competencies on Public Sector Project Success. Sustainability. https://doi.org/10.3390/SU13031421.

[7] Muhammad, U., Nazir, T., Muhammad, N., Maqsoom, A., Nawab, S., Fatima, S., Shafi, K., & Butt, F. (2021). Impact of agile management on project performance: Evidence from I.T sector of Pakistan. PLoS ONE, 16. https://doi.org/10.1371/journal.pone.0249311.

[8] Yao, H., Fu, H., Lu, Y., Xu, P., & Wang, L. (2025). A role paradigm shift in project management: investigating the project manager competencies required by sustainable project management. Engineering, Construction and Architectural Management. https://doi.org/10.1108/ecam-07-2024-0830.

[9] Rodrigues, A., Oladimeji, O., Guedes, A., Chinelli, C., Haddad, A., & Soares, C. (2023). The Project Manager's Core Competencies in Smart Building Project Management. Buildings. https://doi.org/10.3390/buildings13081981.

[10] Bushuyev, S. D., & Ivko, A. V. CONSTRUCTION OF MODELS AND APPLICATION OF SYNCRETIC INNOVATION PROJECT MANAGEMENT IN THE ERA OF ARTIFICIAL INTELLIGENCE Eastern-European Journal of Enterprise Technologies 3/3 (129) 2024 (p. 44–54) DOI: 10.15587/1729-4061.2024.306436.

[11] Bushuyev, S., Chumachenko, I., Galkin, A., Bushuiev, D., Dotsenko, N. Sustainable Development Projects Implementing in BANI Environment Based on AI Tools. Sustainability (Switzerland) Open Access2025, DOI: 10.3390/su17062607.