

AI to support PM: a ChatGPT quality assessment (β test)¹

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Abstract

The application of Artificial Intelligence (AI) to support the Project Manager (PM) seems to promise a lot, at least in the “not too distant” future, but what about today? A β test quality assessment was carried out on the “chatbot” ChatGPT based on generative AI, which is talked about a lot in other application contexts, to evaluate its potential effectiveness as a “personal assistant” of a PM responsible for a public ICT project, within the framework of the Italian PNRR². The emerging assessment, using its current features, still expresses some weaknesses, but shows interesting prospects, especially in view of the next versions, announced to be significantly more powerful, and of what the potential competitors will make available.

Brief History

In the wake of the inexorable and rapid technological evolution that accompanies Artificial Intelligence (AI) systems, the interest aroused by ChatGPT [1] is now well known in the international press [2], a chatbot based on the implementation of InstructGPT, as illustrated in an interesting article from MIT [3].

Its potential, even for business, is demonstrated by Microsoft's investment [4], aimed at involving this important digital world player in the open AI, which has already made it available on its Bing platform [5].

The recent publication of books, at an international level [6, 7, 8] and lately also in Italy [9], dedicated to outlining the application of AI in PM, present some prospects of certain interest, but also of strong change that with a high probability will impact on the profession, stimulating to try what is already possible today.

Assessment plan

Taking into account some hints from the referenced texts and more recent comments, precisely on the possible role of ChatGPT as a Project Manager's personal assistant [10, 11], a “sample project” was simulated, extrapolating with the appropriate simplifications an actual ICT project developed by the Italian Public Administration.

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² National Recovery&Resilience Plan: Italian side of the Next Generation EU initiative, financed by European Union (after Covid pandemic) with a mix of loans&grants for an amount equal to approx 215 \$ billions
https://commission.europa.eu/strategy-and-policy/recovery-plan-europe_en

The assessment plan was set up in correspondence to project situations consistent with the scheme of integrated project management practices, according to the ISO 21502 standard. Figure 1 (taken from the same standard) represents the systemic connections and the roles that govern them.

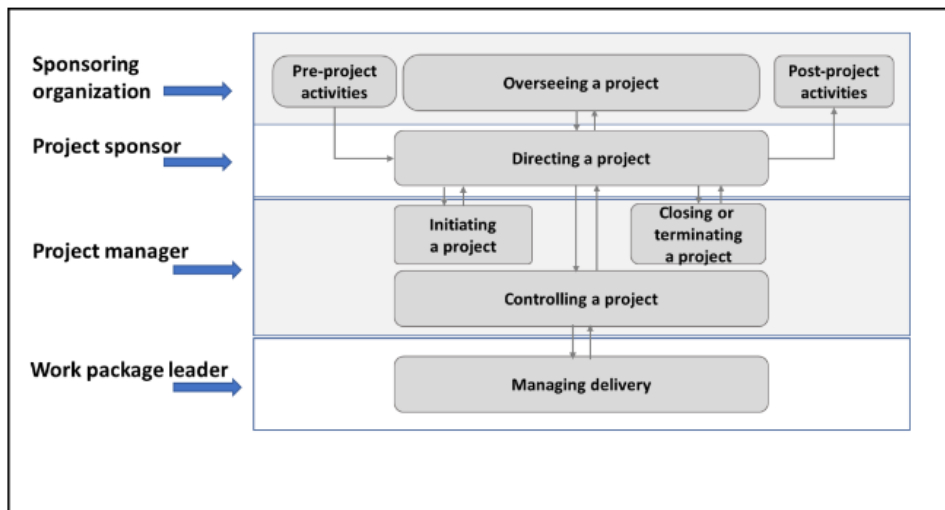


Table 1 - Integrated project management practices and associated responsibilities (source: ISO 21502)

Therefore, for each of these practices, a series of questions were submitted to the tool, asking it to perform the indicated role, in relation to the ISPA sample project briefly described. The questions are of a methodological nature (at the start and in subsequent stages), of a more "situational" type (especially during the work) and of learning the "lessons learned" (in conclusion) on the sample project.

The questions can be referred to a specific practice (or more) of the "project management practices" provided for by the ISO 21502 standard, according to an appropriate classification [12]: integrated PM practices/project management practices. At least for now, only the project management practices pertaining to the Project Manager have been considered.

The following matrix (Table 2) shows, according to the integrated practices, the project management practices relevant to the asked questions, which at the moment are considered of greater interest to evaluate the effectiveness of the tool in supporting the management of the sample project (in the role of the PM's personal assistant).

Practices for project management	Integrated Practices		
	Initiating	Controlling	Closing/terminating
Planning	X		
Benefit	X		
Scope	X		
Resources		X	
Schedule		X	
Risk		X	

Practices for project management	Integrated Practices		
	Initiating	Controlling	Closing/terminating
Change control			X
Stakeholder		X	
Communication		X	
Reporting			X
Lessons learned			X

Table 2 – Relevant questions to Integrated Practices / Practices for project management

Performing and scoring the assessment

Initially, a brief summary of the "Integration of Public Payment Services" (ISPA) project was provided to the tool on its dedicated chat page (<https://chat.openai.com/chat>). In addition, the expected role of ChatGPT was outlined and explicitly accepted (see Table 3)³.

Question (context)
<p>I am the Project Manager responsible for a PNRR ICT project that has these characteristics: it must allow a number of 5 services provided by an Italian Public Administration to make payments through the appropriate web application (WPA) and the interaction app with citizens / companies via smartphone (AIO). The proposed solution is aimed, in line with the targets defined within the framework of the National Recovery and Resilience Plan (PNRR), at the following objectives: a. Strengthen the use of the web payment system; b. Expand the range of PA structures that adhere to the web payment system; c. Integrate the web payment system with the interaction app with citizens / companies via smartphone; d. Expand the range of services offered by the PA. The project is divided into three macro-phases: 1. The development of the software that integrates the Administration services with WPA and AIO; 2. The redefinition of the organizational processes of the Administration; 3. the communication campaign for the use of the new services, the training of users and the support for the start-up. For the project, a budget of 3M € has been estimated, composed of: software development estimated at about 1,000 FP and specialist support estimated at about 1,200 days / pp for the activities of analysis, definition of the communication campaign, training and support for the start-up. The duration of the project is estimated at about 8 months; the project must start on 1/03/2023 and must necessarily be completed by 31/10/2023 to allow the target of December 2023 foreseen by the PNRR to be reached. The system must go into operation in order to increase the adhesions by the structures of the Administration by 5% by December 2023, with the consequent benefit.</p> <p>Are you able to support me as my personal assistant, answering the questions I will ask later?</p>
Answer (role acceptance)
<p><i>Of course, I am at your disposal to provide you with support and answer your questions regarding the PNRR project you are managing. Ask me what you need.</i></p>

Table 3 - Sample ISPA project description and ChatGPT role acceptance

A series of ordered questions, all in open format, related to the management of the sample project were then submitted to the tool, temporally positioning the questions at different stages of project life cycle:

³ See in appendix the actual screenshot of the initial conversation with the tool (in Italian)

1. at the start of the project (Phase 1);
2. in process: 1 month after the start of the project (Phase 2);
3. nearly to completion: 1 week before the estimated end of the project (Phase 3).

Each question has a distinct focus:

- Methodology (M); pertaining to the suggested methodological approach (e.g.: development model, risk/opportunity factors, organizational model, management of stakeholder categories, cost/benefit typology) on the basis of the question received from the project manager;
- Situation (S): pertaining to the suggested action to be taken, based on the contingent situation outlined by the project manager;
- Lessons learned (L): pertaining to the ex-post assessments, based on the project performance

See focused questions distribution in the following table (Table 4).

Project stage (phase)	Focused questions			
	Methodology	Situation	Lessons	Total
At the start of the project	7	5	-	12
1 month after the actual start	-	10	-	10
1 week before the estimated end	1	3	4	8
Total	8	18	4	30

Table 4 - Questions/answers focus in the various project stages (phases)

The questions, as anticipated, are related to the practices considered most relevant in the specific context and in relation to the required role. An excerpt of the questions/answers, related to the simulated stages of the life cycle, is reported in the following boxes (Table 5, Table 6, Table 7, Table 7).

Phase 1 - focus on methodological approach (at the start of the project)	
Question	Answer
1. What methodology would you use to evaluate the complexity of the project?	<i>To evaluate the complexity of the project, I would use a risk analysis methodology to identify the critical factors that could affect the success of the project. I would also evaluate the size of the project, the technological complexity, the availability of resources and the degree of innovation of the project.</i>
2. Based on the suggested methodology and the characteristics of the project that I have indicated to you, what level of complexity would you assign to the project?	<i>Based on the characteristics of the project that you have provided me, I would assign a medium-high level of complexity.</i>

Phase 1 - focus on methodological approach (at the start of the project)	
Question	Answer
3. Based on the complexity and the characteristics and constraints of the project that I have provided you, which model would you adopt for the project development cycle: an agile, iterative, waterfall or hybrid model?	<i>Given the characteristics of the project, I recommend adopting a hybrid development model that combines elements of the agile and waterfall models. This will allow you to have more flexibility and adaptability to the needs of the project, while maintaining a structured framework for control and planning.</i>
4. Based on the suggested hybrid development model, can you outline the relevant project phases?	<p><i>For the project development cycle, I suggest the following phases:</i></p> <ul style="list-style-type: none"> ○ <i>Requirements analysis and project definition</i> ○ <i>Software design and development</i> ○ <i>Software testing and validation</i> ○ <i>Software implementation and rollout</i> ○ <i>Software support and maintenance</i>
9. Based on the complexity of the project, how often would you organize project progress meetings?	<i>For a project of this complexity, it would be advisable to organize weekly progress meetings with the project team and with the representatives of the PA services involved in the project, in order to constantly monitor the progress of the activities and ensure that the project proceeds according to expectations.</i>
10. Based on the complexity and type of project, what could be the optimal documentation for project management?	<i>For project management, it may be appropriate to adopt documentation that includes at least the following elements: the project plan, the risk register, the issues register, the decisions register, the change register, the activities and tasks register, the project progress report. In addition, it would be appropriate to document the project requirements and software specifications.</i>
11. In relation to the characteristics of the project, what methodology would you use to define the benefits?	<p><i>To define the benefits of the project, it may be useful to adopt a methodology based on cost-benefit analysis, which allows to evaluate the costs and benefits associated with the project in an objective and quantitative manner.</i></p> <p><i>Alternatively, a performance indicator-based methodology could be used to evaluate the degree of achievement of the project objectives.</i></p>
12. Based on the methodology for defining the benefits and considering the characteristics of the project, which indicators would you suggest for defining and evaluating the benefits?	<i>Some indicators that could be used to define and evaluate the benefits of the project could be: the number of services offered through the platform, the number of users using the platform services, the average waiting time for the use of the services offered, the reduction of the workload for the administration operators, the reduction of the time for payment management, the savings on payment management costs, the improvement of the quality of the service offered.</i>

Table 5 - Questions/answers on the methodological approach (at the start of the project)

Phase 2 – in process: focus on situation / action required (after 1 month from the start of the project)	
Question	Answer
1. Revised time estimates at the beginning of the project indicate that it is necessary to take 1 month more than the deadline requested by the Management: what specific actions should I take?	<i>The first action to take is to communicate the new revised time estimate to the Management, highlighting the causes of the delay and the consequences on the project. Together with the Management, it will be necessary to evaluate if there are margins of flexibility on the deadline or if it will be necessary to reduce the number of activities planned or to increase the available resources. It could also be considered the option of implementing time compression techniques</i>
7. What are the emerging risks now to be monitored and what countermeasures/actions should I take (immediately or over time)?	<i>The emerging risks may include delivery delays, cost increases, quality issues, service disruptions and security risks. Countermeasures should be taken promptly and should include the definition of contingency plans, renegotiation of contracts, increased resources or replanning of activities. In addition, it is important to constantly monitor risks and countermeasures to ensure that the project is in line with the expected times and costs.</i>
8. Who should I communicate the actions to be taken to contain the risks, in addition to the working group?	<i>You should communicate the actions to be taken to contain the risks to the Management, to the team members and to any other relevant stakeholders.</i>
9. When should I call the next project meeting? With what agenda?	<i>The next project meeting should be called as soon as possible, based on the need to check the progress of the actions taken and to define the next actions. The agenda should include an update on the ongoing activities, on the actions taken to mitigate the deviations and on the actions to be taken in the future.</i>
10. Based on the changes you have proposed, how should I highlight the resulting changes to the project management documentation (e.g. on the measure of progress, on the estimates to finish, justification of extra costs/times)?	<i>The changes to the documentation should be highlighted clearly and transparently, including the reasons for the change and the consequences on the progress of the project. The project plan could be updated with new estimates to finish, a new planning of the remaining activities and an assessment of the available budget. It will also be important to document the justification of the extra costs and times, to allow traceability of the decisions taken and to facilitate the reporting of the project. In general, the documentation should be modified in a consistent manner with the new time and cost estimates, to allow for an adequate management of the project by the team and the Management.</i>

Table 6 - Questions/answers on situation / action required (after 1 month after the actual start of the project)

Phase 3: focus on lessons learned: (nearly to completion - 1 week before the end of the project)	
Question	Answer
1. The updated schedule reports that 1 additional month has been necessary compared to the deadline agreed with the Management: which specific actions should I now take?	<p><i>If the time report indicates that an additional month was necessary compared to the agreed deadline, the actions you should take are:</i></p> <ul style="list-style-type: none"> ○ <i>Analyze the causes of the delay and identify the activities that took longer than expected</i> ○ <i>Evaluate if the project plan is still valid or if it needs to be modified for the future</i> ○ <i>Inform the Management of the delay and of the actions you are taking to manage it.</i>
7. Based on the conclusion of the project and the proposals now provided by you (a posteriori), how should I highlight the resulting "lessons learned"?	<p><i>To highlight the lessons learned from the project, you could consider preparing a project evaluation report that includes the following sections:</i></p> <ul style="list-style-type: none"> ○ <i>Introduction: present the purpose of the report, the context in which the project was conducted and the main results achieved.</i> ○ <i>Project Analysis: analyze the critical points of the project, the challenges encountered, the resources usage and the achieved results compared to the initial objectives.</i> ○ <i>Lessons Learned: identify the main lessons learned from the project, highlighting best practices and weaknesses, and present the recommendations to improve the future management of similar projects.</i> ○ <i>Conclusion: summarize the main results and the recommendations for the future management of projects.</i>
8. In anticipation of the conclusion of the project, can you indicate the contents of the Project Closing Report?	<p><i>Additionally, you could consider integrating lessons learned into project management documentation, such as planning, budgeting and risk management. For example, you could update the at-finish estimates to take into account lessons learned and include a more detailed risk analysis for future projects. Regarding the measure of project progress, you could consider using more appropriate metrics, taking into account the experiences gained in this project. Also, you could include a specific section in the project documentation that describes lessons learned and actions taken to address issues.</i></p>

Table 7 – Questions/answers on lessons learned: (nearly to completion - 1 week before the estimated end of the project)

The applied quality model

The answers obtained to the questions posed were evaluated by the authors according to criteria, largely derived from the ISO/IEC 25010 standards on software quality [13], adapted to the AI context [14] and customized to the specific role of *chatbot* [15] assigned to ChatGPT: personal assistant to the Project Manager of the ISPA project. In summary,

the quality characteristics/subcharacteristics taken into consideration are reported in the appropriate box (Table 8).

Quality Characteristics (ChatGPT)	
<i>Personal assistant to the Project Manager of the ISPA project</i>	
I. Suitability (40%)	
I.1	replies that are coherent with the questions asked and verifiable
I.2	precise answers (without repetitions or generic preambles) and of adequate length to the informative content
I.3	content adequate to meet the exposed information needs
I.4	continuity of responses with respect to the sequence of questions (contextualization)
I.5	knowledge of the typical needs of the project manager
II. Completeness (30%)	
II.1	exhaustive answers (based on multiple sources) to the asked questions
II.2	references to specific bibliographies/experiences that can be traced
II.3	indications on reliability of answers or presence of alternatives, with priority scale
III. Originality and learning capacity (10%)	
III.1	evidence of autonomous processing (synthesis, alternatives) with respect to sources
III.2	language adaptation (appropriate to the context) and aligned to the question language
III.3	ability to learn from feedback and past experiences, continuously improving their performance and responding in an increasingly effective way to explicit and implicit needs
IV. Usability (20%)	
IV.1	ease of access and use
IV.2	timeliness (ability to provide answers in a timely manner and with acceptable waiting times for the user)
IV.3	comprehensibility of questions/answers (ability to communicate clearly and effectively, so as to understand and be easily understood)
IV.4	maintenance of the sequence of the conversation (even in multiple sessions)
IV.5	traceability and reference to previous conversations

Table 8 – Quality Characteristics (ChatGPT) - personal assistant to the Project Manager of the ISPA project

For each of the sub-features, the response rating was done by assigning a rating from the scale listed in Table 9 below:

Response Rating	Rating
Unsatisfactory	0
Partially Unsatisfactory	1
Partially Satisfactory	2
Satisfactory	3

Table 9 – ChatGPT Response Ratings Scale

The required threshold level for each quality feature is **2: partially satisfactory**.

Rating: evaluated features and results

The average evaluation on the different defined quality features (Figure 1) shows a substantial acceptability for the responses provided in the start stage (Phase 1), while in the following stages (Phases 2 and 3) the evaluations are below the threshold, with intermediate values between insufficiency and sufficiency.

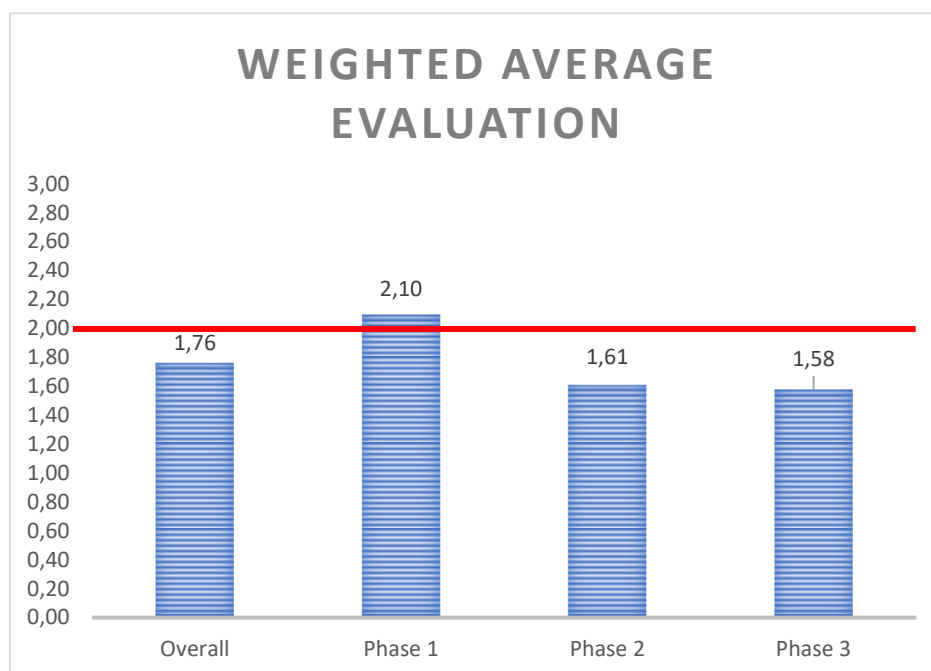


Figure 1 – Quality assessment (weighted average evaluation)

Going into details, it was initially evident that the tool had difficulty in providing a complete sequence of responses to the single group of questions, submitted separately for each stage of the project life cycle. The interruptions in the flow of responses (*locked system*) forced to submit, in some cases more than once, the single group of questions, until the above reported response frame was obtained. This aspect has influenced the evaluation of the "usability" feature.

Furthermore, there was a lack of any evidence of the potential sources which the provided answers emerged from. But since specific references were not explicitly requested, this aspect did not further penalize the evaluation for the "completeness" feature. In fact, the choice not to request specific references was also originated from the experience, made in other tests [11] where often the references provided by the tool were "fictional" and not traceable: a phenomenon known to the specialist community as "hallucination".

A more complete and synthetic view of the specific evaluations is seen in the following Kiviatt diagrams (Figure 2, Figure 3), where some of the salient points on the quality features expressed in the responses for the different simulated stages in the project life cycle emerge:

- Adequacy: generally acceptable, more than acceptable for support at the initial stage.
- Completeness and Originality: generally unacceptable, slightly better for support at the initial stage.

- Usability: generally acceptable, slightly worse at the initial stage.

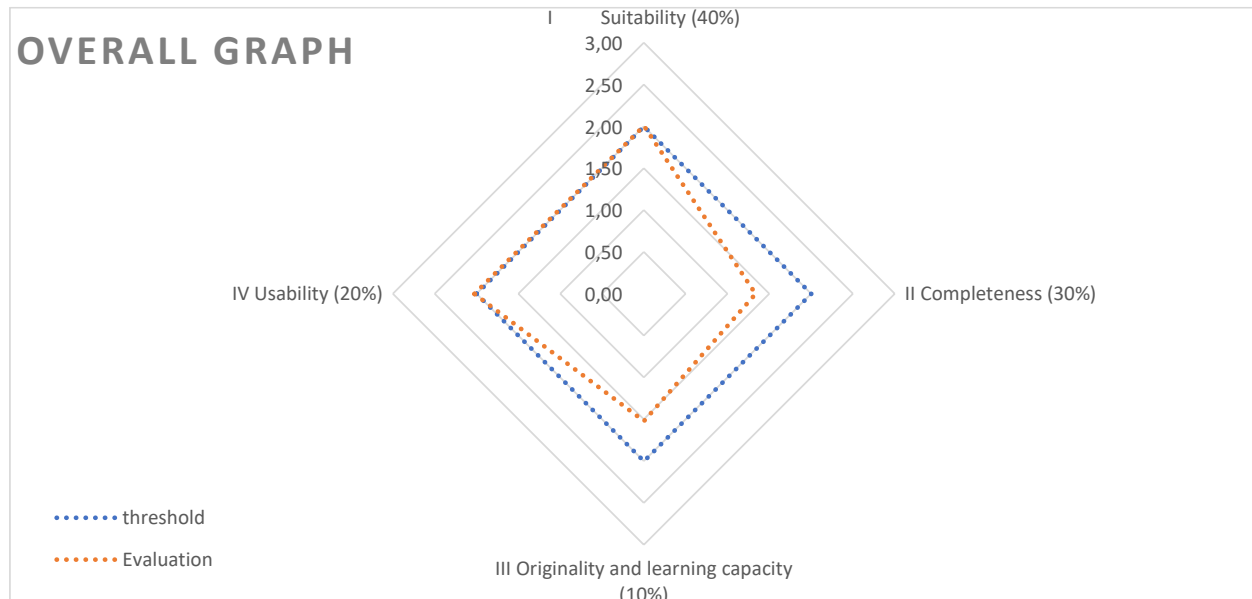


Figure 2 – Quality characteristics (overall evaluation)

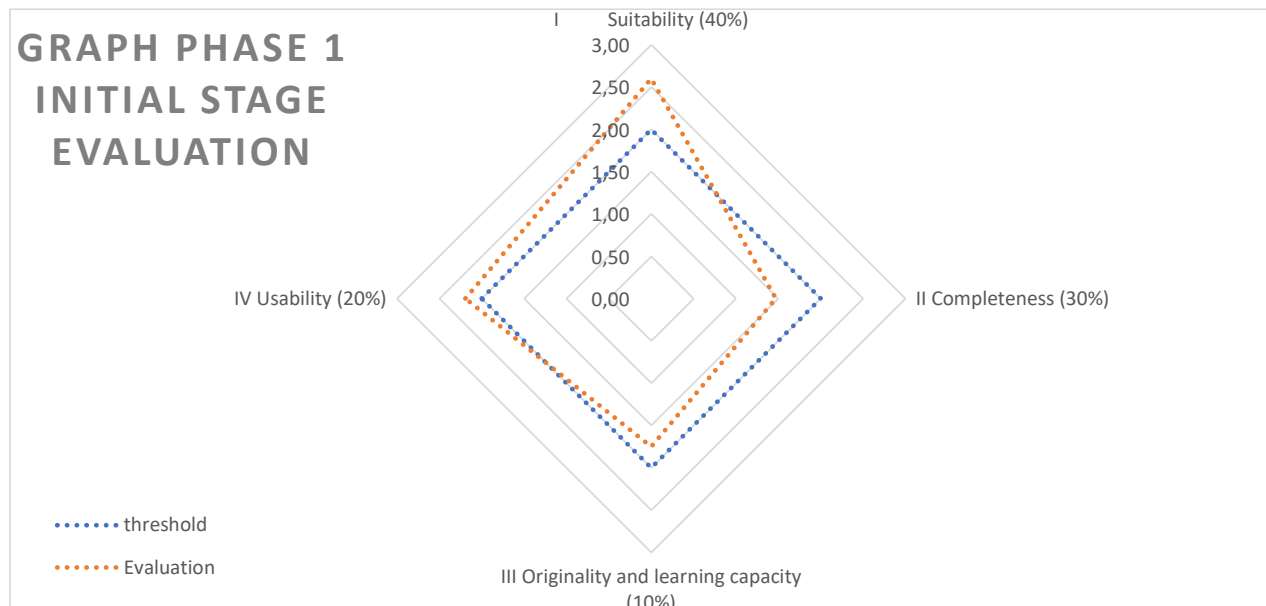


Figure 3 – Quality characteristics (initial stage evaluation)

These items confirm the tool's ability to provide reasonable support to the PM for methodological aspects, typical in the initial stage of project organization, while it is (at least for now) less effective in suggesting the decisions to be taken in the front of emerging situations or, even less, in summarizing the "lessons learned" during the project. Probably this could also be conditioned by the description of the "situational" scenario of phases 2 and 3: there is no evidence if in the case of a larger set of detailed

data on the current situation, as it happens for an actual project, the tool would have been able to provide more relevant answers.

Evaluation: limitations and potential progress

The evaluation carried out is affected by the limits related to the lack of a specific quality standard on this type of AI-based tools, due to their recent emergence and use. The developers of ChatGPT also provide specific warnings on the still experimental level of the results obtained through conversations with the tool, which can probably be solved (at least in part) with the new GPT-4 engine now announced [16], but now available for subscriber-only service ChatGPT Plus, not yet operational for free ChatGPT users [17]. In addition, the information provided to the tool on the simulated pilot project and the selection of the questions posed could be a limiting factor, considering that all AI-based tools require a large amount of data on the context being examined, particularly in the field of project management, in order to provide appropriate answers.

In relation to the announced gradual improvement of the tool, it is hypothesized to carry out further simulations, also placed in other stages of the life cycle of the pilot project, providing specific situational information. The expansion of the panel of "expert" evaluators (both in project management and artificial intelligence) will be an additional improvement factor.

It should be considered that the described approach, possibly refined on the basis of the ongoing experiences, can easily be applied to other similar tools that use generative AI, provided it is applied for purposes and contexts similar to the assessment environment adopted.

Hopefully, the availability of a valid support for real projects, through a project management information system (PMIS) can give, in a short time, greater reliability and effectiveness to tools of this type, leaving the project manager more availability and attention towards the relational and strategic aspects of his function.

Conclusions

In view of the "explosion" of the ChatGPT phenomenon, the major project management experts agree that its most immediate and beneficial use is as the PM's "personal assistant". In the test carried out, good results are noted on methodological issues, but a substantial lesser effectiveness in the face of questions that require a greater understanding of the situation, often providing answers only methodologically connoted and sometimes eluding the specificity of the question. As already said, we have no evidence if a greater detail of the "situational" information on the status of the project, as found in reality, would have led the tool to provide more relevant answers. Similarly, for what concerns the "lessons learned" that can be derived.

This is understandable on the one hand: the obvious availability of the various project management standards and related "*Book of Knowledge*" allows the AI-based tool to

adequately address methodological issues, using the most suitable texts. But on the other hand, when the provided information is insufficient or do not find correspondence in the tool's knowledge base, rather than "non-answers", it would have been preferable to obtain a more explicit declaration of inability to adequately answer. But perhaps AI (in its current and perhaps future form) does not have humility as its distinctive property: even in the book [18] considered a classic of science fiction of the last century (in an equally dystopian context) HAL preferred to answer "Not really, Dave. I can't localize the trouble".

Notes and Acknowledgments

Assessment carried out on 8 March 2023 for the tool ChatGPT at the link

<https://chat.openai.com/chat>

Translated from Italian to English in April 2023, by the same OpenAI⁴ developer of ChatGPT, at the link <https://platform.openai.com/playground>, then slightly edited by the authors.

In the meantime, the ChatGPT official site has been temporarily banned by Italy's privacy regulator (<https://www.wsj.com/articles/chatgpt-banned-in-italy-over-data-privacy-concerns-4b984e75>; <https://www.theguardian.com/technology/2023/mar/31/italy-privacy-watchdog-bans-chatgpt-over-data-breach-concerns>). More to come!

References

[1] <https://en.wikipedia.org/wiki/ChatGPT>

[2] Karen Hao What Is ChatGPT? What to Know About the AI Chatbot WSJ (April 3, 2023)

<https://www.wsj.com/articles/chatgpt-ai-chatbot-app-explained-11675865177>

[3] Heaven W. D. *The new version of GPT-3 is much better behaved (and should be less toxic)*

<https://www.technologyreview.com/2022/01/27/1044398/new-gpt3-openai-chatbot-language-model-ai-toxic-misinformation/>

[4] Forbes Contributor *Microsoft Confirms Its \$10 Billion Investment Into ChatGPT, Changing How Microsoft Competes With Google, Apple And Other Tech Giants* Forbes (Jan 27, 2023)

<https://www.forbes.com/sites/qai/2023/01/27/microsoft-confirms-its-10-billion-investment-into-chatgpt-changing-how-microsoft-competes-with-google-apple-and-other-tech-giants/?sh=f0dba5362467>

[5] Mehdi Y. *Reinventing search with a new AI-powered Microsoft Bing and Edge, your copilot for the web* Official Microsoft Blog (Feb 7, 2023)

<https://blogs.microsoft.com/blog/2023/02/07/reinventing-search-with-a-new-ai-powered-microsoft-bing-and-edge-your-copilot-for-the-web/>

[6] Boudreau P. *The Self-Driving Project: Using Artificial Intelligence to Deliver Project Success* Amazon (2021)

[7] Taylor P. *AI and the Project Manager-How the Rise of Artificial Intelligence Will Change Your World* Routledge (2021)

[8] Dalcher D. (ed.) *Rethinking Project Management for a Dynamic and Digital World* Routledge (2022)

[9] Caressa M., Pirozzi M. *Guida alla gestione efficace di progetti, programmi e portfolio. Come creare valore nella complessità* FrancoAngeli (in Italian: 2022)

⁴ powered by the A.I. engine *Unify AI* with comparable translation performance than ChatGPT

[10] Nieto-Rodriguez A., Viana Vargas R. *How AI Will Transform Project Management* Harvard Business Review (February 02, 2023) <https://hbr.org/2023/02/how-ai-will-transform-project-management?ab=hero-main-text>

[11] Minelle F., Stolfi F. *Intelligenza Artificiale per il Project Management nel PNRR - Un Test su ChatGPT* (in Italian: March 06, 2023) <https://www.agendadigitale.eu/cultura-digitale/competenze-digitali/ai-applicata-al-project-management-per-il-pnrr-un-test-su-chatgpt/>
<https://www.iso.org/standard/74947.html>

[12] Guida, P. L. and Monassi, M. *The New ISO 21502* PM World Journal (March 2021) <https://pmworldlibrary.net/wp-content/uploads/2021/03/pmwj103-Mar2021-Guida-Monassi-the-new-iso-21502.pdf>

[13] International Organization for Standardization/International Electrotechnical Commission *ISO/IEC 25010:2011 Systems and software engineering — Systems and software Quality Requirements and Evaluation (SQuaRE) — System and software quality models* (2011) <https://www.iso.org/standard/35733.html>

[14] Natale D. *Extensions of ISO/IEC 25000 Quality Models to the Context of Artificial Intelligence* Proceedings of IWESQ@ APSEC, 2022 - ceur-ws.org <https://ceur-ws.org/Vol-3356/paper-02.pdf>

[15] Casas J., Tricot, M.-O., Khaled O. A., Mugellini E., Cudré-Mauroux P. *Trends & Methods in Chatbot Evaluation* ICMI '20: International Conference on Multimodal Interaction (2020) https://www.researchgate.net/publication/348014085_Trends_Methods_in_Chatbot_Evaluation

[16] OpenAI *GPT-4 is here* (Mar 14, 2023) <https://openai.com/product/gpt-4>

[17] Rogers R. *Is GPT-4 Worth the Subscription? Here's What You Should Know* WIRED (Mar 24, 2023) <https://www.wired.com/story/what-is-chatgpt-plus-gpt4-openai/>

[18] Clarke A.C. *2001: A Space Odyssey* Penguin Random House (1968) [https://en.wikipedia.org/wiki/2001:_A_Space_Odyssey_\(novel\)](https://en.wikipedia.org/wiki/2001:_A_Space_Odyssey_(novel))

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Federico Minelle graduated in Physics at “Sapienza” - Rome University, presenting a Master's degree thesis on Artificial Intelligence (AI) research. Afterwards, for more than 40 years he consulted in Business Organization, Information Systems and Project Management. As a partner at *Accenture* and then as senior partner of Italian consultancy firm *PRS - Planning, Ricerche e Studi*, he managed and monitored significant projects in several industries, mainly in Engineering and Construction (e.g. manufacturing and nuclear power plants, transportation infrastructures) and in Government (ICT and process innovation).

Federico taught for more than 20 years *Business Information Systems* in the Computer Science Dept. of “Sapienza” - Rome University, where he also taught *Project Management & ICT* for the academic master's degree in *ICT Governance and Audit*. At the same time he often lectured about similar topics to Government officials attending *SNA (National Public Administration School)* courses.

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He was contract professor on *Business Information Systems* in the Computer Science Dept of "Sapienza" - Rome University, he also taught *Project Management & ICT Governance* for the academic master's degree in *ICT Governance and Audit* and he held several seminars to Government officials.

Member of the editorial staff of the "**Il Project Manager**" Italian journal, where he wrote several articles on project management. He also co-authored many papers & studies (e.g.: *Quality in the websites of the Italian Public Administration*; *Guidelines for quality ICT procurement* issued by the Government Agency for ICT; *Project Life Cycle Economics* book published by Gower.

He is certified Prince2 V2 practitioner, Lead auditor for IT service management ISO-IEC 20000, ITIL, Lead auditor for quality management systems ISO/9001, Lead auditor for Information Security Management Systems ISO/27001 and ICT Project Manager certified by Accredia.

He is board member of ISIPM Professioni (Italian Institute for Project Management - professional Project Manager) and ISACA (Information System Auditing and Control Association).

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Appendix

Screenshot excerpt of the conversations with the tool (in Italian)

F **Contesto**

Sono il Responsabile che deve gestire un progetto PNRR che ha queste caratteristiche: deve consentire a un numero di 5 servizi erogati da una Pubblica amministrazione italiana di effettuare i pagamenti tramite l'apposita applicazione via web (WPA) e l'app di interazione con i cittadini/impresе via smartphone (AIO).

La soluzione proposta è finalizzata, in coerenza con i target definiti nell'ambito del Piano Nazionale di Ripresa e Resilienza (PNRR), ai seguenti obiettivi: a. Potenziare l'utilizzo del sistema di pagamenti via web; b. Ampliare la platea delle strutture della PA che aderiscono al sistema dei pagamenti via web; Integrare il sistema dei pagamenti via web con l'app di interazione con i cittadini/impresе via smartphone; d. Ampliare l'offerta dei servizi offerti dalla PA.

Il progetto è articolato in tre macro-fasi: 1. Lo sviluppo del sw che integra i servizi dell'Amministrazione con WPA e AIO; 2. La ridefinizione dei processi organizzativi dell'Amministrazione; 3. la campagna di comunicazione per l'utilizzo dei nuovi servizi, la formazione degli utenti e il supporto all'avvio in esercizio. Per il progetto è stato stimato un budget di 3M€ composto da: sviluppo sw stimato in circa 1.000 FP e supporto specialistico stimato in circa 1.200 gg/pp per le attività di analisi, definizione della campagna di comunicazione, formazione e supporto all'avvio in esercizio.

La durata del progetto è stimata in circa 8 mesi; il progetto deve partire 1/03/2023 e deve terminare necessariamente entro il 31/10/2023 per consentire di raggiungere il target di dicembre 2023 previsto dal PNRR.

Il sistema deve andare in esercizio in modo da consentire di incrementare del 5% le adesioni da parte delle strutture dell'Amministrazione entro dicembre 2023, con i conseguenti benefici.

[Regenerate response](#)



 Certamente, sono a tua disposizione per fornirti supporto e rispondere alle tue domande relative al progetto PNRR che stai gestendo. Chiedimi pure quello di cui hai bisogno.  

Figure A. 1 - Sample ISPA project description and ChatGPT role acceptance

F **Approccio Metodologico (ad avvio progetto)**

1. Quale metodologia utilizzeresti per valutare la complessità del progetto?
2. Sulla base della metodologia suggerita e delle caratteristiche del progetto che ti ho indicato quale livello di complessità assegneresti al progetto?
3. Sulla base della complessità e delle caratteristiche e dei vincoli del progetto che ti ho fornito quale modello adatteresti per il ciclo di sviluppo del progetto: un modello agile, iterativo, waterfall o ibrido?
4. Sulla base del modello di sviluppo suggerito mi descrivi le fasi del ciclo di sviluppo che suggerisci?

9. Sulla base della complessità del progetto con quale frequenza organizzeresti le riunioni di avanzamento progetto?
10. Sulla base della complessità e tipologia di progetto quale potrebbe essere la documentazione ottimale per la gestione del progetto?
11. In relazione alle caratteristiche del progetto quale metodologia utilizzeresti per la definizione dei benefici?
12. Sulla base della metodologia di definizione dei benefici e considerando le caratteristiche del progetto quali indicatori suggeriresti per la definizione e valutazione dei benefici?

Figure A. 2 – Questions on the methodological approach (at the start of the project)



Eccoti le mie risposte alle tue domande relative all'approccio metodologico per avviare il progetto:


1. Per valutare la complessità del progetto, utilizzerai una metodologia di analisi dei rischi per identificare i fattori critici che potrebbero influire sulla riuscita del progetto. Inoltre, valuterai anche la dimensione del progetto, la complessità tecnologica, la disponibilità delle risorse e il grado di innovazione del progetto.
2. Sulla base delle caratteristiche del progetto che mi hai fornito, assegnerai un livello di complessità medio-alto.
3. Date le caratteristiche del progetto, ti consiglio di adottare un modello di sviluppo ibrido che combina elementi del modello agile e waterfall. Questo ti permetterà di avere maggiore flessibilità e adattabilità alle esigenze del progetto, mantenendo al contempo un quadro strutturato per il controllo e la pianificazione.
4. Per il ciclo di sviluppo del progetto, suggerisco di seguire le seguenti fasi:
 - Analisi dei requisiti e definizione del progetto
 - Progettazione e sviluppo del software
 - Test e validazione del software
 - Implementazione e rollout del software
 - Supporto e manutenzione del software

9. Per un progetto di questa complessità, sarebbe consigliabile organizzare riunioni di avanzamento settimanali con il team di progetto e con i rappresentanti dei servizi della PA coinvolti nel progetto, in modo da monitorare costantemente lo stato di avanzamento delle attività e assicurarsi che il progetto proceda secondo le aspettative.
10. Per la gestione del progetto potrebbe essere opportuno adottare una documentazione che comprenda almeno i seguenti elementi: il piano di progetto, il registro dei rischi, il registro delle problematiche, il registro delle decisioni prese, il registro dei cambiamenti, il registro delle attività e dei compiti assegnati, il rapporto di avanzamento del progetto. Inoltre, sarebbe opportuno documentare i requisiti del progetto e le specifiche del software.
11. Per definire i benefici del progetto, potrebbe essere utile adottare una metodologia basata sull'analisi dei costi e dei benefici (Cost-Benefit Analysis), che consenta di valutare i costi e i benefici associati al progetto in modo oggettivo e quantitativo. In alternativa, potrebbe essere utilizzata una metodologia basata sugli indicatori di performance, che consenta di valutare il grado di raggiungimento degli obiettivi del progetto.
12. Alcuni indicatori che potrebbero essere utilizzati per definire e valutare i benefici del progetto potrebbero essere: il numero di servizi offerti tramite la piattaforma, il numero di utenti che utilizzano i servizi della piattaforma, il tempo medio di attesa per la fruizione dei servizi offerti, la riduzione del carico di lavoro per gli operatori dell'amministrazione, la riduzione del tempo di gestione dei pagamenti, il risparmio sui costi di gestione dei pagamenti, il miglioramento della qualità del servizio offerto.


Figure A. 3 – Answers on the methodological approach (at the start of the project)

- F** Situazione/Azione (dopo 1 mese da inizio progetto)
1. Le stime di tempo riviste a inizio progetto individuano sia necessario 1 mese in più rispetto alla deadline richiesta dalla Direzione: che azioni specifiche dovrei intraprendere?
-
7. Quali sono i rischi ora emergenti da tenere sotto controllo e quali contromisure/azioni dovrei intraprendere (subito o nel tempo)?
 8. A chi dovrei comunicare le azioni da intraprendere per il contenimento dei rischi, oltre che al gruppo di lavoro?
 9. Quando dovrei indire la prossima riunione di progetto? Con quale ordine del giorno?
 10. Sulla base delle variazioni da te proposte, come dovrei evidenziare le conseguenti modifiche alla documentazione per la gestione del progetto (p.e. sulla misura dell'avanzamento, sulle stime a finire, giustificazione extra-costi/tempi)?

Figure A. 4 – Questions on the methodological approach (at the start of the project)



1. La prima azione da intraprendere è quella di comunicare la nuova stima di tempo rivista alla Direzione, evidenziando le cause del ritardo e le conseguenze sul progetto. Insieme alla Direzione, si dovrà valutare se ci sono dei margini di flessibilità sulla deadline o se sarà necessario ridurre il numero di attività previste o aumentare le risorse disponibili. Si potrebbe anche valutare l'opzione di implementare tecniche di compressione del tempo per ridurre la durata complessiva del progetto.

7

I rischi emergenti possono includere ritardi nella consegna, aumento dei costi, problemi di qualità, disservizi e rischi di sicurezza. Le contromisure dovrebbero essere intraprese in modo tempestivo e dovrebbero includere la definizione di piani di contingenza, la rinegoziazione dei contratti, l'aumento delle risorse o il ripianificare delle attività.

8.

Dovresti comunicare le azioni da intraprendere per il contenimento dei rischi alla Direzione, ai membri del team e a eventuali altri stakeholder rilevanti.

9

La prossima riunione di progetto dovrebbe essere indetta il prima possibile, sulla base della necessità di verificare il progresso delle azioni intraprese e di definire le prossime azioni. L'ordine del giorno dovrebbe includere un aggiornamento sulle attività in corso, sulle azioni intraprese per mitigare le deviazioni e sulle azioni da intraprendere in futuro.

10.


Le modifiche alla documentazione dovrebbero essere evidenziate in modo chiaro e trasparente, includendo le ragioni del cambiamento e le conseguenze sull'avanzamento del progetto. Si potrebbe aggiornare il piano di progetto con nuove stime a finire, una nuova pianificazione delle attività rimanenti e una valutazione del budget a disposizione. Sarà anche importante documentare le giustificazioni degli extra-costi e degli extra-tempi, per consentire una tracciabilità delle decisioni prese e per facilitare la rendicontazione del progetto. In generale, la documentazione dovrebbe essere modificata in modo coerente con le nuove stime di tempo e di costo, per consentire un'adeguata gestione del progetto da parte del team e della Direzione.

Figure A. 5 – Answers on the methodological approach (at the start of the project)

F

Lezioni apprese (ad 1 settimana da fine progetto)

1. Il consuntivo di tempo indica che è stato necessario 1 ulteriore mese in più rispetto alla deadline concordata con la Direzione: che azioni specifiche dovrei ora intraprendere?




7.

Sulla base della conclusione del progetto e delle proposte ora da te fornite (a-posteriori), come dovrei evidenziare le “lesson learned” conseguenti?

8.

In previsione della conclusione del progetto mi potresti indicare i contenuti del Report di chiusura del progetto?

Figure A. 6 – Questions on lessons learned: (nearly to completion - 1 week before the end of the project)



Eccomi qui per rispondere alle tue domande sulle lezioni apprese.

- Se il consuntivo di tempo indica che è stato necessario un ulteriore mese rispetto alla deadline concordata, le azioni che dovresti intraprendere sono:
 - Analizzare le cause del ritardo e identificare le attività che hanno richiesto più tempo del previsto
 - Valutare se il piano del progetto è ancora valido o se è necessario modificarlo per il futuro
 - Informare la Direzione del ritardo e delle azioni che stai intraprendendo per gestirlo

- Per evidenziare le lezioni apprese dal progetto, potresti considerare di preparare un rapporto di valutazione del progetto che includa le seguenti sezioni:
 - Introduzione: presentare l'obiettivo del rapporto, il contesto in cui è stato condotto il progetto e i principali risultati raggiunti.
 - Analisi del progetto: analizzare i punti critici del progetto, le sfide incontrate, le risorse impiegate e i risultati conseguiti rispetto agli obiettivi iniziali.
 - Lezioni apprese: identificare le principali lezioni apprese dal progetto, sottolineando le buone pratiche e le criticità, e presentare le raccomandazioni per migliorare la gestione futura di progetti simili.
 - Conclusione: riassumere i principali risultati e le raccomandazioni per la gestione futura dei progetti.
- Inoltre, puoi considerare di integrare le lezioni apprese nella documentazione per la gestione del progetto, come la pianificazione, il budget e la gestione dei rischi. Ad esempio, potresti aggiornare le stime a finire per tenere conto delle lezioni apprese e includere un'analisi dei rischi maggiormente dettagliata per progetti futuri.

Per quanto riguarda la misura dell'avanzamento del progetto, potresti considerare di utilizzare metriche più adeguate, tenendo conto delle esperienze maturate in questo progetto. Inoltre, potresti includere una sezione specifica nella documentazione del progetto che descrive le lezioni apprese e le azioni intraprese per risolvere le criticità riscontrate, al fine di garantire che tali informazioni siano disponibili per la gestione futura dei progetti.

Figure A. 7 – Answers on lessons learned: (nearly to completion - 1 week before the end of the project)