

Revolutionizing Project Management: An Intelligent Agent Approach to Efficiency and Innovation

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ABSTRACT

This paper presents a solution for building an AI agent using Copilot Studio and Power Automate to achieve automation and intelligence in project management.

In terms of automation, the system implements project management functions through workflows developed with Power Automate, including automatically sending task-related Teams messages, pushing document links, calculating project timelines, storing operational data, and synchronizing, refreshing operational data reports built with Power BI and sending auto-alert, etc.. These functions can be executed by users via command instructions in the agent bot interface or by the Power Automate's scheduled flow feature.

In terms of intelligence, the system adopts hybrid architecture: first using embedding technology to match user questions with backend databases to obtain precise answers; for queries that cannot be directly matched, it leverages Copilot Studio's generative AI capabilities to generate contextually relevant responses based on uploaded file databases. This dual-source answer mechanism ensures the accuracy and completeness of responses.

We built this platform to directly address the core inefficiencies of traditional project management: its fragmented nature, heavy reliance on manual effort, and lack of centralization. By deeply integrating AI and automation within the convenient Teams environment, we are reshaping the project management experience. Our goal is to deliver unprecedented leaps in efficiency, collaboration, and resource optimization for organizations, ultimately accelerating successful project delivery and value creation.

INTRODUCTION

In modern project management practice, efficient collaboration and precise execution are critical to project success. However, traditional project management approaches often face multiple challenges, leading to inefficiency, information delays, and significant managerial overheads:

1. **Information Silos & Communication Delays:** Project information is scattered across emails, documents, meeting notes, and multiple tools (e.g., Excel, task boards). Team members spend significant time switching between platforms and manually collecting/integrating data. Distributing key instructions, status updates, or task assignments relies on point-to-point or multi-step manual communication (emails, chats, meetings), leading to time-consuming processes, frequent oversights, and poor traceability.
2. **Manual Operations & Update Burden:** Project timeline scheduling, adjustment, and visualization heavily depend on manual maintenance via spreadsheets. Any plan changes require responsible personnel to painstakingly update records and ensure visibility, resulting in a cumbersome, error-prone process with uncertain real-time accuracy.

3. **Fragmented & Reactive Task Management:** Project members often juggle multiple responsibilities and must proactively track tasks assigned across projects. Without systemic proactive reminders, critical deadlines or deliverables can be missed due to heavy workloads or information overload, placing a heavy burden on personal task management and relying solely on individual discipline.
4. **Inefficient Resource Allocation:** Staff allocation or assessing team workload typically requires manual data gathering and cross-departmental coordination. This is a time-consuming process that struggles to respond quickly to changes, potentially impacting project timelines and optimal resource utilization.

These pain points not only significantly prolong project cycles and increase management costs but also foster poor collaboration, information asymmetry, and even delivery risks.

To address these core challenges, we developed an AI Agent-driven, intelligent, and automated project management system – a Chatbot platform seamlessly integrated within Microsoft Teams. Its mission is:

- **Transform "Multi-Step" into "One-Step":** Radically replace the need for constant platform switching and complex manual operations. Users can now execute all actions via natural language conversations with the Chatbot in the Teams interface, achieving single, concise instructions what previously required multi-layered processes across different platforms.
- **Embed Automation & Intelligence into Core Workflows:**
 - **Instant Communication & Instruction Routing:** Send messages or instructions instantly and accurately to relevant individuals or teams with one click, eliminating inefficient communication loops.
 - **Intelligent Timeline Management:** Drive the entire lifecycle of Timelines – including generation, dynamic updates, efficient retrieval, and secure storage – through simple commands, freeing managers from spreadsheet maintenance.
 - **Automated Personnel Coordination & Assignment:** Effortlessly handle task allocation, adjustments, and resource coordination based on needs, enabling rapid response to project changes.
 - **Proactive Task Management:** The platform features automated push notifications , proactively reminding members of pending tasks, deadlines, and critical changes, empowering them to manage responsibilities effectively and reducing oversight risks.
 - **One-Click Panoramic Visibility:** Gain one-click/single-instruction access to team-wide or individual workloads, progress status, and key information, enhancing transparency and decision-making speed.

The fundamental transformation our platform delivers includes:

- **Unified Interface & Simplified Operations:** All project management capabilities are seamlessly integrated into the Teams chat environment, eliminating the need to switch between different applications – "One chat window manages everything."
- **Instruction-Driven Efficiency Leap:** Complex management actions are condensed into simple natural language commands, significantly lowering the operational barrier and execution time (e.g., tasks requiring hours of coordination now take seconds via chat).
- **Automated Execution, Liberating Human Capital:** AI Agents handle vast amounts of repetitive, rule-based execution (e.g., sending reminders, updating statuses, assigning tasks), freeing managers and team members to focus on higher-value decision-making and collaboration.
- **Real-time & Intelligent Data:** Timelines and task data are updated in real-time and easily accessible, providing managers with a dynamic, accurate project overview.
- **Enhanced Collaboration Reliability & Member Proactiveness:** Automated reminders and direct information flow ensure critical updates reach recipients, reducing human error and boosting member initiative and project engagement.

The goal of this project is to harness the power of artificial intelligence to liberate project managers and team members from repetitive labor and fragmented operations. By enabling automation and intelligence of core project management processes through a single, smart conversational interface, we aim to dramatically improve project execution efficiency, reduce management costs, and ultimately increase project success rates. We are committed to redefining the future of project management workflows.

SMART PROJECT MANAGEMENT SYSTEM

The rapid adoption of new tools has significantly improved efficiency in statistical programming and reporting. However, these advancements have also introduced new layers of operational complexity.

Today's Study Lead Programmers (SLPs) often find themselves coordinating with 3 – 4 distinct specialized teams, each comprising multiple sub-teams. Delivering even a single analysis may require collaboration with 6 – 8 cross-functional stakeholders. Furthermore, since each of these teams independently manages its deliverables, SLPs are tasked with updating multiple trackers for a single review.

In the face of growing demands for early Proof of Concept (POC), more frequent data reviews, and increasingly dynamic timelines, manual project tracking has become unsustainable. To address these challenges, SmartPM-Assist, a smart project management system was developed as an advanced solution to streamline and automate statistical programming project management — purpose-built to tackle the complexities of managing modern specialized workflows.

SmartPM-Assist is a custom-built automated project management and operational monitoring system that leverages Teams chatbot integration to simplify workflows across the study lifecycle. It is designed to:

Streamline collaboration among programming study teams, specialized personnel groups, and Statisticians.

Centralize and automate project management, communication processes, and operational monitoring throughout the study lifecycle.

The primary goal of SmartPM-Assist is to enhance operational efficiency while ensuring compliance excellence.

SmartPM-Assist Capabilities

Through a single conversational command, users can efficiently execute core project management operations:

1. Task Resource Assignment/Update

Rapidly assign team members to tasks or dynamically adjust resource allocations based on changing requirements.

2. Automated Timeline Setup/Synchronization

Intelligently generate project schedules and auto-adjust timelines when task progress, dependencies, or resources change.

3. One-Click Project Status Tracking

Instantly query overall project progress, milestone completion status, and task overviews.

4. Intelligent Risk Monitoring & Alerts

Proactively identifies project risks (delays, resource conflicts, budget deviations) and triggers real-time notifications before issues escalate.

5. Instant Resource Portal Access

One-command access to training materials, document templates, and real-time Dashboard views for workflow visibility.

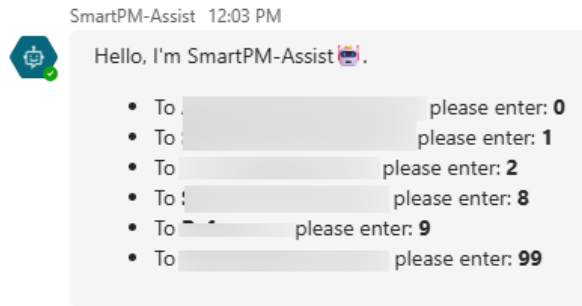


Fig1. Command list



Fig2. Answer from Chatbot when users ask questions

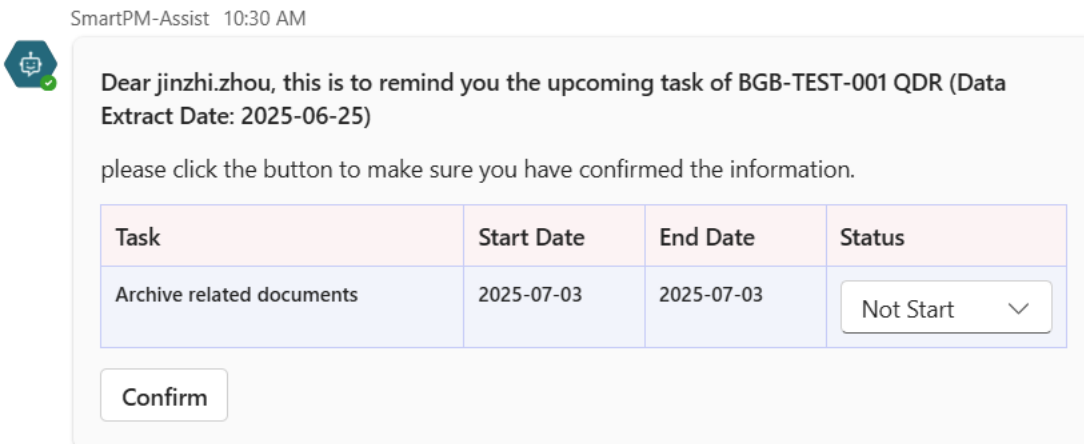


Fig3. Send a reminder message to the task owner when the task is about to begin

SmartPM-Assist integrates cutting-edge automation and intelligent technologies to elevate project management. This powerful technological capability also enables the development of smarter, more efficient Q&A robots.

INTELLIGENT Q&A ASSISTANT

In clinical research, statisticians collaborate closely with multiple departments. Addressing statistical inquiries from colleagues across departments constitutes one of their key responsibilities. Additionally, the statistics department provides comprehensive resource support, including training materials, Dashboard analytics, and various statistical tools, all designed to effectively serve cross-functional partners.

SGPAR ChatBot, an AI-powered intelligent Q&A bot built on Copilot Studio technology, offers the following core features:

- Real-time answers to frequently asked questions about statistical methods
- Quick access to SGPAR website resources via Teams Chatbot interface for one-stop information retrieval
- Serves as an efficient communication bridge, significantly reducing interaction costs with the SGPAR team
- Supports both web and Microsoft Teams platforms for convenient anytime, anywhere access



Fig4. Greeting message from Chatbot when user start chat with assistant



Fig5. Answer from Chatbot when users ask questions

CONCLUSION

In conclusion, this research provides a scalable blueprint for operational digital transformation in project management. By harnessing low-code AI and automation tools, we have not only addressed inefficiencies but also redefined workflows through a unified, intelligent interface. The integration of SmartPM-Assist and the SGPART ChatBot exemplifies how technology can liberate teams from repetitive labor, driving measurable gains in efficiency and project success rates. We are committed to advancing this paradigm, setting a foundation for future innovations in intelligent project management.

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