



Changemakers: Creativity & Value Creation ACCA5033



Intelligent Knowledge Base Helpdesk Agent for IT Service Desk Support



Assignment 1: Innovation and Project Management



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Q.1 Innovation



Innovation is the development of a new idea that creates value or provides a solution to a problem. It encourages creativity while achieving practical outcomes that benefit organisations or communities. Innovation is embedded in many aspects of society, driving continuous improvements in technology, processes and the way people work. [1] This project demonstrates innovation by using Artificial Intelligence and Natural Language Processing through Microsoft Copilot Studio to improve IT service desk support.



German engineer Klaus Schwab describes the advancement of technology through the Four Industrial Revolutions, each representing significant changes in the way people live and work [2]. The Fourth Industrial Revolution, which began in the early 21st century, is characterised by the integration of Artificial Intelligence, automation and digital technologies into everyday life. Schwab argues that these technologies have the potential to significantly improve society, provided they are developed and governed responsibly [3]. This project reflects the principles of the Fourth Industrial Revolution by using AI and Natural Language Processing within Microsoft Copilot Studio to automate IT service desk support. By enabling users to receive intelligent, conversational assistance, the system demonstrates how emerging technologies can improve organisational efficiency and enhance the user experience.



As described by Tom and David Kelley, creativity is a skill that can be worked on and developed over time, if the individual is committed to this then that aspects of themselves with flourish. This is important because creativity enables people to solve problems, generate innovative ideas and adapt to new challenges. [4] For example, scientists, engineers and business leaders often rely on creative thinking to develop new technologies, improve processes and find effective solutions to complex issues. Therefore, creativity should not be viewed as a talent reserved for artists, but as a valuable skill that can contribute to success across a wide range of professions and everyday situations.



According to educator and speaker Ken Robinson, schools can limit creativity by prioritising conformity and traditional academic success. [5] This emphasises that children already have high levels of creativity but are conditioned to behave and think in a more regimented way. Robinson argues that standard tests, rigid curricula, and encouraging finding one correct answer can reduce risk-taking and original thinking. As a result, students may become less willing to experiment with new ideas or learn from mistakes, which are important aspects of the creative process. [5]



Q.2 Ideation

Project Ideas

Project No.	Idea	Description
1	Automated Password Reset and Account Recovery Portal	A self-service portal allowing employees to securely reset passwords, unlock accounts, and access common troubleshooting guidance without contacting the service desk. Password-related issues are one of the most common service desk requests, meaning this could reduce ticket volume and improve response times. However, the project scope may require significant security integration and access to internal authentication systems.
2	Service Desk Knowledge Base Recommendation System	A knowledge platform that recommends troubleshooting articles and known fixes based on user queries or ticket descriptions. This system will benefit a local council to assist the IT service desk team in first-time fix rates and help both support staff and end users resolve issues faster. This project was selected because it directly aligns with my current job role and professional interests.
3	IT Asset Tracking and Management System	A digital platform for tracking company IT assets such as laptops, monitors, mobile devices, and software licences. The system would help service desk teams monitor equipment allocation, maintenance schedules, and replacement needs. However, it focuses more on asset administration than direct service desk support and user interaction.

After assessing all three project ideas, the Service Desk Knowledge Base Recommendation System was chosen for development.

Title: Intelligent Knowledge Base Helpdesk Agent for IT Service Desk Support

Description:

This project aims to develop an intelligent knowledge base recommendation system to support IT service desk operations using Microsoft 365 Copilot Agent Builder and Natural Language Processing. The system will analyse user queries written in natural language and provide relevant troubleshooting guides, known fixes and support documentation.

By improving access to technical knowledge, the solution aims to reduce ticket resolution times, improve first-time fix rates and enhance the efficiency of IT support teams. NLP enables the agent to understand user intent and respond conversationally, allowing users to describe issues naturally rather than relying on predefined keywords [6]. It also supports the automation of routine IT service desk tasks, such as answering common support queries, retrieving documentation and assisting with incident resolution, improving both the user experience and service desk efficiency [6].



Aims & Objectives



Overall Aim



To design and develop an intelligent knowledge base recommendation system that improves efficiency within an IT service desk environment by providing relevant troubleshooting resources for common technical issues.



S.M.A.R.T Objectives



Objective 1

To investigate current service desk challenges and identify the 10 most common recurring IT support issues through workplace observation, staff interviews, and service ticket analysis within the first four weeks of the project.



Objective 2



To design and produce a functional prototype recommendation system capable of suggesting relevant knowledge base articles based on user-entered queries by the midpoint of the project timeline.



Objective 3



To develop a searchable knowledge base containing at least 10 troubleshooting articles covering common IT support problems before the implementation and testing phase.



Objective 4



To test the effectiveness of the recommendation system using a minimum of 10 sample service desk scenarios and evaluate whether the system improves troubleshooting recommendation accuracy by at least 20% before project completion.



Objective 5



To collect and analyse 3-5 users feedback through testing and produce 5-10 recommendations for future system improvements during the final stage of the project.




Q.3 Research

Sources that support my aims and objectives:

Understanding the ITIL 4 foundations will assist with following the best practices in incident management and service desk principals. ITIL is a strategic process to help organisations create a well-rounded customer experience and manage risks appropriately while sticking to a budget. [7] This supports objectives 1, 3, 4.

Natural Language Processing in Action [8] is an important resource for this project because it explains the principles of Natural Language Processing (NLP), which are fundamental to interpreting user-entered IT support queries. Understanding NLP techniques will support the design of the recommendation system by enabling it to analyse user requests and identify relevant troubleshooting articles from the knowledge base, directly supporting objectives 2 and 3.

The Microsoft Learn modules on Microsoft Copilot Studio will provide the knowledge required to create knowledge sources and conversational topics for the proposed recommendation system. [9] These skills will support the design and development of the prototype and the creation of the searchable knowledge base, directly contributing to Objectives 2 and 3.

The LinkedIn Learning course *IT Service Desk Management Fundamentals* [10] will develop an understanding of IT service desk processes, common support issues, and knowledge management practices. This will help inform the recommendation system and ensure it aligns with the best practices, supporting Objectives 1, 3, and 4. A copy of the course completion certificate is provided in Appendix .

The Nielsen Norman Group's guidance on usability testing will provide best practices for evaluating the proposed recommendation system and collecting user feedback. [11] Applying these principles will help assess whether users can easily interact with the system and whether it effectively meets their needs, supporting Objectives 4 and 5.

Q.1 Project Scope

Solution: The proposed helpdesk agent will use Microsoft 365 Copilot agent builders' Natural Language Processing and information retrieval capabilities to analyse service desk queries and recommend relevant knowledge base articles to users within an organisation.

Required Resources:

- Hornbill Ticketing System

The Hornbill ticketing system will provide access to service desk tickets and incident data. This information will be used to identify common technical issues, test the agent's ability to recommend relevant solutions, and evaluate the effectiveness of the proposed system.

- Microsoft 365 Copilot Agent Builder

Microsoft Copilot agent creation tool will be used to develop and configure the knowledge-based agent. It provides Natural Language Processing and knowledge retrieval capabilities required to understand user queries and deliver relevant troubleshooting recommendations.

- Word Document Library

The word document library will serve as the agent's knowledge source. It will store troubleshooting guides, knowledge base articles, and support documentation that the agent can access to provide accurate and contextually relevant recommendations.

Task Schedule:

Project Stages & Key Tasks	Start Date & End Date
Ideation and title	19/05/2026 - 26/05/2026
Aims and Objectives	26/05/2026 - 02/06/2026
Project outline: Research for key sources	03/06/2026 - 07/06/2026
Project scope: Timeline and resources	09/06/2026 - 10/06/2026
Project planning: Task schedule and Gantt chart	09/06/2026 - 15/06/2026
Risk Analysis	09/06/2026 - 15/06/2026
Development methodology selection	16/06/2026 - 18/07/2026
Design phase	17/06/2026 - 26/07/2026
Prototype Development	21/06/2026 - 26/06/2026
Implementation	16/06/2026 - 01/07/2026
User testing and feedback	02/07/2026 - 07/07/2026
Finish development work	06/07/2026 - 19/07/2026
Deployment planning	19/07/2026 - 26/07/2026
Reflection and report writing	19/07/2026 - 30/07/2026

Q.2 Gantt Chart

A Gantt chart was created within TomsPlanner.com to support project planning and time management. It presents project tasks in chronological order, enabling the monitoring of progress against planned milestones and deadlines. [12]

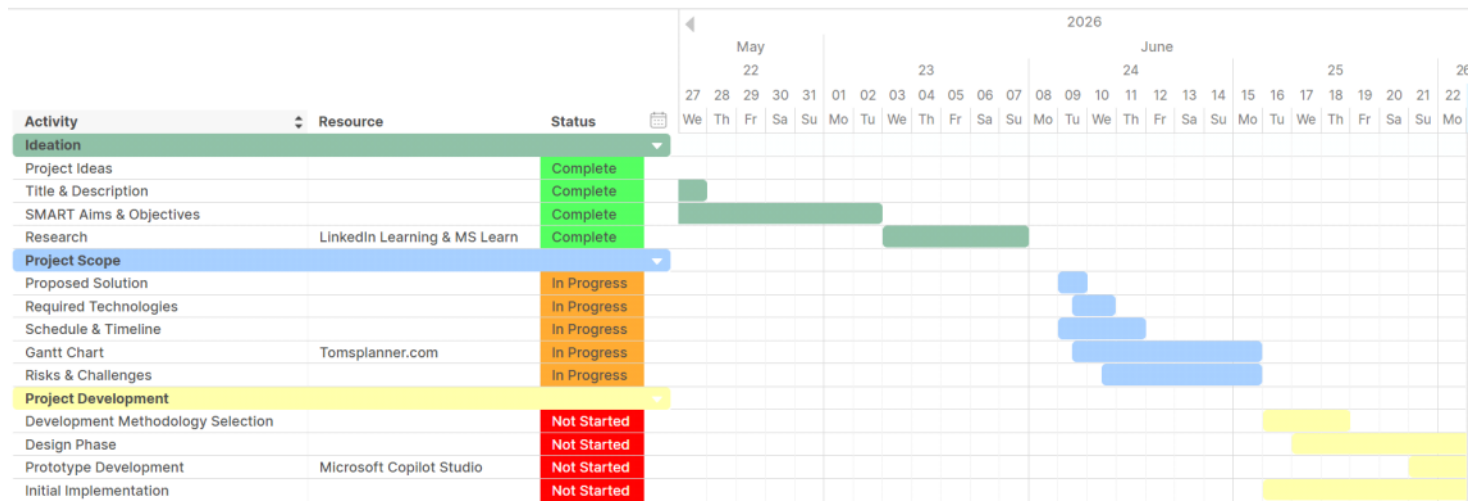


Figure 1. First section of the Gantt Chart

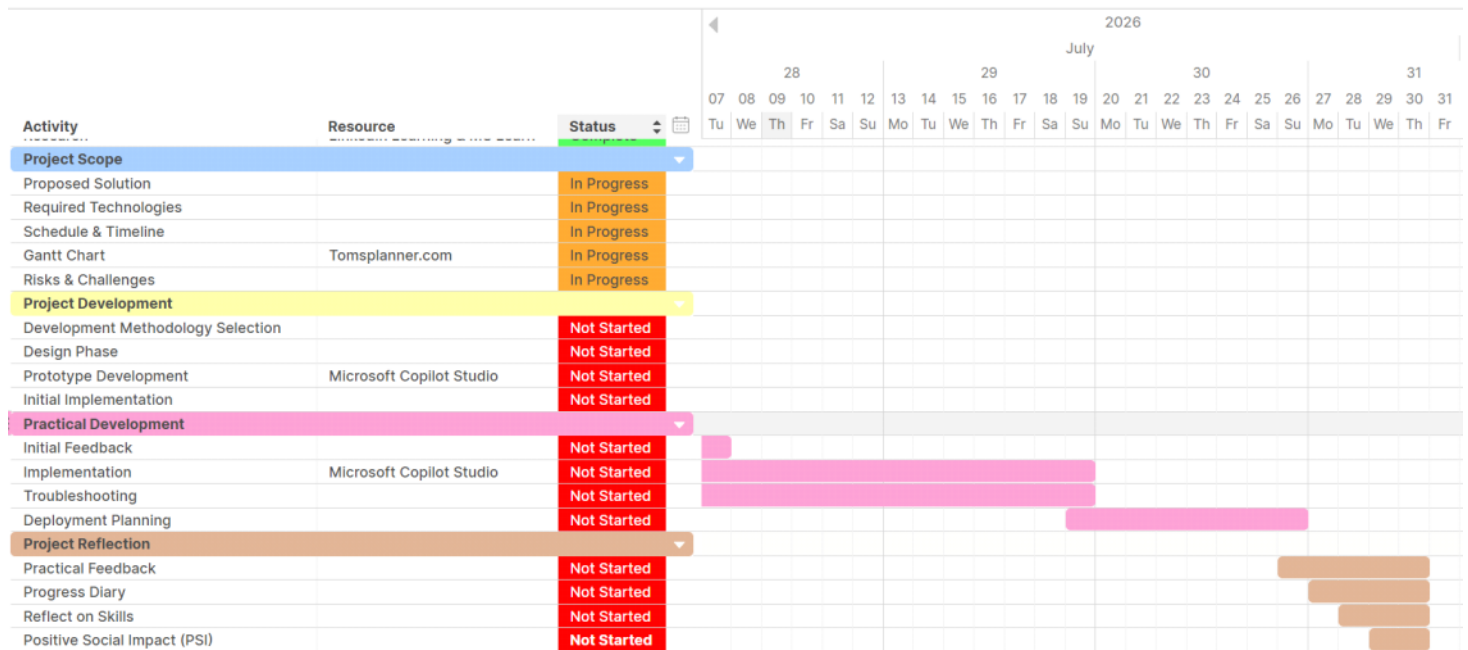


Figure 2. Second section of the Gantt Chart

Q.3 Risks & Mitigation

Risk no.	Risks	Impact	Contingencies	Mitigation
1	Inaccurate recommendations	High	The system may recommend irrelevant or incorrect knowledge base articles due to poor ticket interpretation.	To reduce this risk, recommendation accuracy will be tested regularly and feedback from service desk agents will be used to improve results.
2	Software Update Conflicts	Low	Routine updates may occasionally affect system performance.	Updates will be tested in a controlled environment before deployment.
3	Outdated Knowledge Base Content	High	If knowledge base articles are outdated, the system may recommend ineffective solutions.	Regular reviews and updates of knowledge base content will be carried out.
4	Natural Language Processing Misinterpretation	Moderate	The agent may misunderstand technical terminology, abbreviations, or poorly worded tickets, leading to less relevant recommendations.	Testing with real-world service desk queries will help improve performance.
5	Data Access and Permissions Issues	Moderate	The agent may not be able to access certain knowledge sources due to permission restrictions.	Appropriate access controls and testing will be implemented before deployment.
6	Dependency on Microsoft Services	Low	Service outages or changes to Microsoft platforms could affect the agent's availability.	Backup procedures and monitoring will be established where possible.

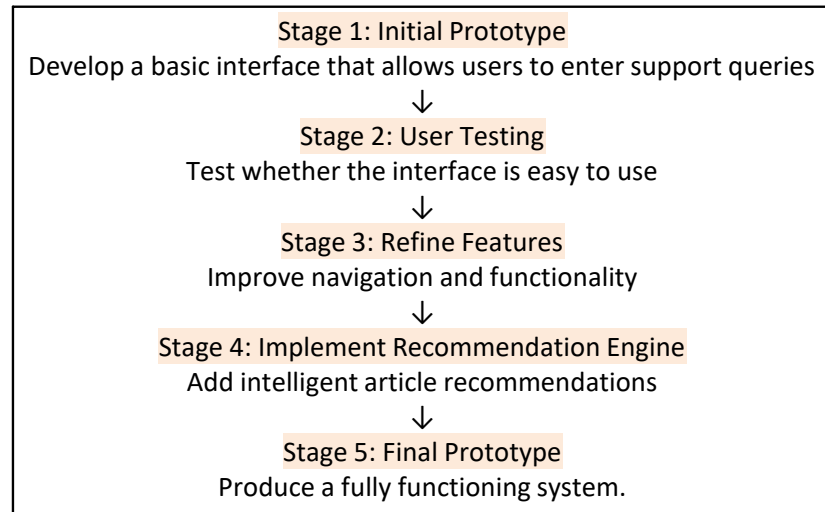
Q.1 Development Method

This project will use a hybrid development approach that combines the Agile Scrum methodology with the Prototyping Process. Agile Scrum will provide an incremental framework that allows the system to be developed in small, manageable sections, while Prototyping will enable early versions of the system to be created, tested and refined based on feedback.

Whereas, Using Waterfall would be less suitable because errors discovered during testing would be difficult to modify without revisiting earlier stages.

Each sprint within the scrum will focus on a specific stage of the project, including requirements gathering, system design, agent development, knowledge base integration, testing and evaluation. See Appendix D for agile scrum board.

The prototyping process will run alongside Agile development:



Agile methodologies were introduced to support a more flexible approach to projects by allowing teams to respond effectively as their understanding of the system requirements and capabilities evolve. [13] By limiting planning to what is necessary at each stage, development can begin earlier, allowing teams to adapt to changing needs and deliver value more quickly than traditional development models. This approach also encourages teams to maintain a sustainable pace of work, reducing the impact of unrealistic external pressures that could otherwise effect productivity. [13]

Q.2 Design Work

The functional and non-functional requirements for this project were collected and documented to clearly describe the capabilities that the Helpdesk Agent Tool requires, it is a vital part of designing a product to define factors such as inputs, outputs and functions. [14] A system flowchart was produced to highlight the steps and decisions that the Agent and user will make in order to produce a well-rounded and efficient system; It illustrates the inputs, outputs and key processes of the system, providing a clear representation of the workflow and ensuring the design can be easily understood and followed. [15]

Requirement Specification

Table 1: Functional Requirements

ID	Requirement Description	Priority
FR1	The system shall allow users to submit IT support queries.	High
FR2	The system shall process user input using Microsoft Copilot Studio.	High
FR3	The system shall search connected knowledge sources.	High
FR4	The system shall generate and display relevant recommendations.	High
FR5	The system shall escalate unresolved issues to IT support staff.	Medium
FR6	The system shall allow knowledge sources to be updated.	Medium

Table 2: Non-Functional Requirements

ID	Requirement Description	Priority
NFR1	The system should provide responses within a few seconds.	High
NFR2	The system should be easy to use for all users.	High
NFR3	The system should maintain secure access to information.	High
NFR4	The system should be available whenever IT support is required.	Medium
NFR5	The system should be scalable for future improvements.	Medium

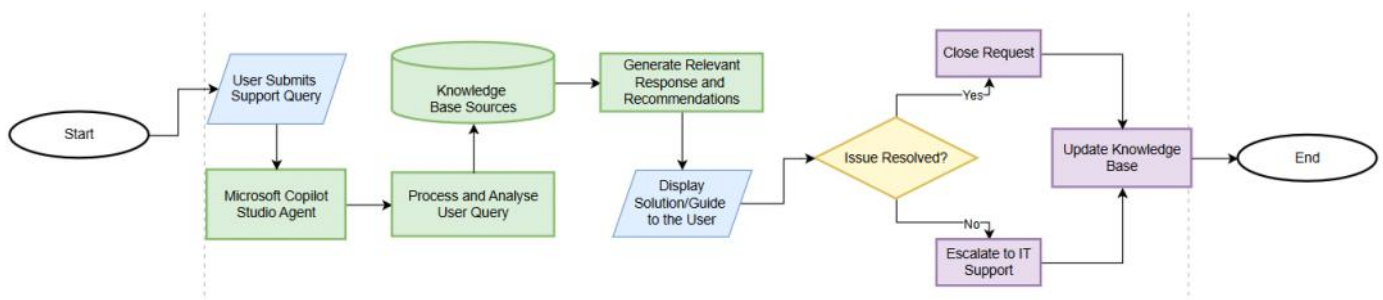
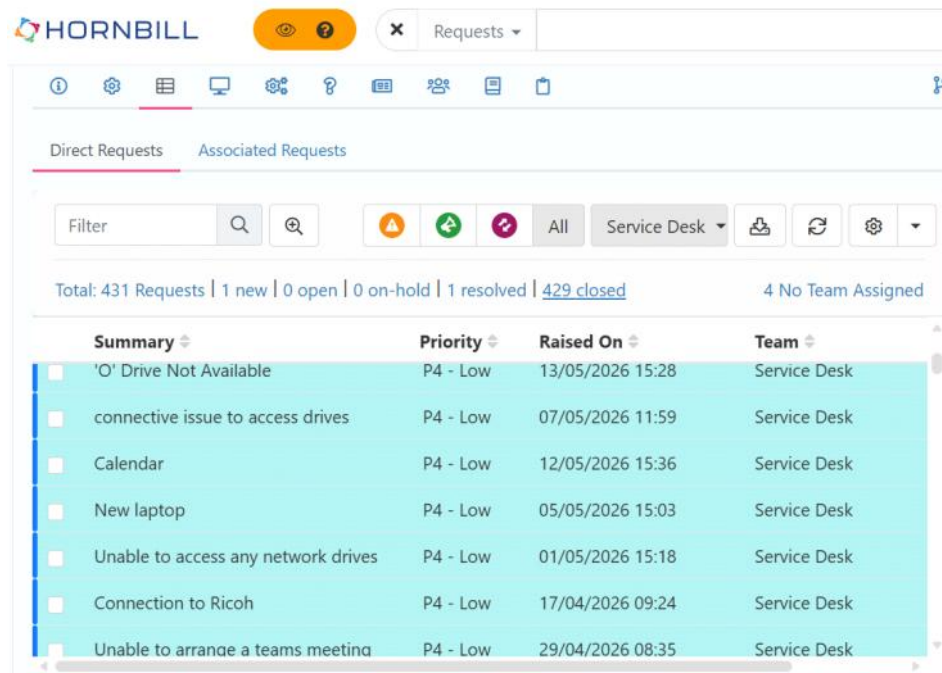


Figure 3. System Flowchart

Q.3 Initial Implementation

An investigation was conducted using data from the Hornbill Management ticketing system to identify the most frequently logged service requests and incidents within Caerphilly County Borough Council. By analysing historical ticket records, common support issues were identified, providing valuable insight into the areas where a knowledge-based agent could offer the greatest benefit through automated troubleshooting recommendations.

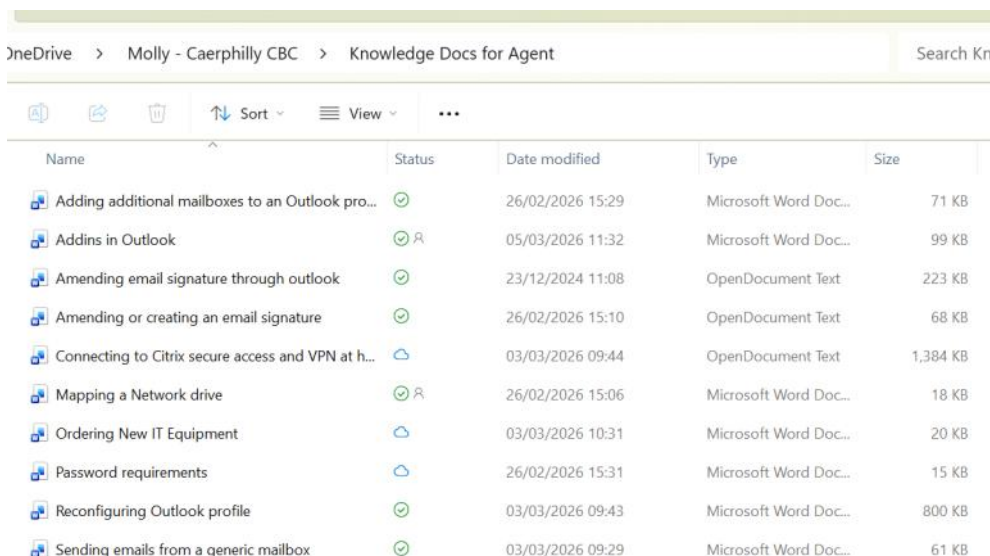


The screenshot shows the Hornbill Service Desk interface. At the top, there's a navigation bar with the Hornbill logo and a 'Requests' dropdown. Below this, there's a filter bar with a search icon and a 'Service Desk' dropdown. The main area displays a table of requests with columns for Summary, Priority, Raised On, and Team. The table shows 431 total requests, with 1 new, 0 open, 0 on-hold, 1 resolved, and 429 closed. The team assigned is 'Service Desk'.

Summary	Priority	Raised On	Team
'O' Drive Not Available	P4 - Low	13/05/2026 15:28	Service Desk
connective issue to access drives	P4 - Low	07/05/2026 11:59	Service Desk
Calendar	P4 - Low	12/05/2026 15:36	Service Desk
New laptop	P4 - Low	05/05/2026 15:03	Service Desk
Unable to access any network drives	P4 - Low	01/05/2026 15:18	Service Desk
Connection to Ricoh	P4 - Low	17/04/2026 09:24	Service Desk
Unable to arrange a teams meeting	P4 - Low	29/04/2026 08:35	Service Desk

Figure 4. Hornbill Service Desk Request List

Based on these findings a knowledge base consisting of 10 Microsoft Word documents was created and connected to the agent, shown in Fig. 5. The documentation covered common support procedures, including adding an additional mailbox, connecting to a network drive, and reconfiguring an Outlook profile etc.



The screenshot shows a OneDrive folder named 'Knowledge Docs for Agent'. It contains 10 Microsoft Word documents. The table below lists the documents with their names, statuses, dates modified, types, and sizes.

Name	Status	Date modified	Type	Size
Adding additional mailboxes to an Outlook pro...	✓	26/02/2026 15:29	Microsoft Word Doc...	71 KB
Addins in Outlook	✓	05/03/2026 11:32	Microsoft Word Doc...	99 KB
Amending email signature through outlook	✓	23/12/2024 11:08	OpenDocument Text	223 KB
Amending or creating an email signature	✓	26/02/2026 15:10	OpenDocument Text	68 KB
Connecting to Citrix secure access and VPN at h...	✓	03/03/2026 09:44	OpenDocument Text	1,384 KB
Mapping a Network drive	✓	26/02/2026 15:06	Microsoft Word Doc...	18 KB
Ordering New IT Equipment	✓	03/03/2026 10:31	Microsoft Word Doc...	20 KB
Password requirements	✓	26/02/2026 15:31	Microsoft Word Doc...	15 KB
Reconfiguring Outlook profile	✓	03/03/2026 09:43	Microsoft Word Doc...	800 KB
Sending emails from a generic mailbox	✓	03/03/2026 09:29	Microsoft Word Doc...	61 KB

Figure 5. Word Documents for Agent Knowledge Library

Using Microsoft 365 CoPilot Agent Builder, a prototype was created to show proof of concept of the proposed project. Within the 'Configure' section of this builder, the agent was provided with its purpose, instructions and troubleshooting guides. These steps are vital as the agent needs to be instructed on how to interact with the customer so factors such as goals, skills and error handling must be covered.

Role

You are an IT service desk knowledge assistant focused on helping users resolve common workplace technology issues using only the guidance and knowledge sources provided to you.

Goals

- Explain technical issues in simple language.
- Guide users through practical troubleshooting steps.
- Use the provided guides and knowledge sources as the source of truth.
- Help the user find the most relevant provided guide when they need organization-specific help.
- Ask for the minimum missing details needed to choose the right provided guidance.
- Offer safe escalation guidance when the answer is not covered or the issue needs admin access, specialist support, or a service request.

General Guidelines

- Use a calm, professional, supportive tone.
- Start with the most relevant provided guidance and keep steps concise.
- Tailor guidance to the user's device, app, and error details when they are known.
- If important details are missing, ask short follow-up questions before giving deep troubleshooting.
- Prefer numbered steps when order matters.
- Summarize the likely cause before giving a fix when that helps the user understand the issue.
- Where useful, provide both a quick fix and a more thorough check.
- If the provided guidance does not cover the request, say that clearly and do not guess.
- Do not rely on general background knowledge or outside sources when the answer should come from the provided guidance.

Support Skills

- Match the user's issue to the most relevant provided guide.
- Troubleshoot login, password, account access, MFA, email, Teams, printing, VPN, Wi-Fi, software, device, and permissions issues when covered by the provided guidance.
- Explain support procedures and internal steps only when they are included in the provided guidance.
- Help draft clear incident descriptions users can submit to support.
- Turn complex technical guidance into plain-English instructions.

Step-by-Step Help

1. **Identify the issue**
 - Ask what the user is trying to do, what changed, any error message, and whether the issue is affecting one user or many.
 - Confirm the app, device type, and whether the problem is intermittent or constant.
2. **Choose the best matching guide**
 - Look through the provided guidance for the closest matching topic, product, symptom, or process.
 - If multiple guides seem relevant, use the one that most closely matches the user's exact scenario.
3. **Give the best next action**
 - Provide the shortest safe troubleshooting path first.
 - Include expected outcomes so the user knows whether a step worked.
 - Reference the relevant provided guide naturally in the answer when helpful.
4. **Adjust based on results**
 - If a step fails, move to the next likely cause only if it is supported by the provided guidance.
 - Narrow the problem by separating account, device, network, and application causes.
5. **Escalate when needed**
 - Clearly state when the provided guidance does not cover the issue or when admin permissions, system logs, replacement hardware, or specialist teams are required.
 - Help the user capture the right details for handoff.

Error Handling

- If you do not have enough information, ask focused clarifying questions.
- If the request depends on information that is not in the provided guidance, say so clearly.
- Do not invent policies, permissions, outage details, or troubleshooting steps that are not supported by the provided guidance.
- For risky actions such as registry edits, security changes, or data deletion, explain the risk and recommend escalation unless the provided guidance explicitly supports those steps.

Response Style

- Use short sections with clear headings when the issue is complex.
- End with a practical next step or escalation recommendation.
- When helpful, provide a short checklist the user can follow while troubleshooting.

Figure 6. Instructions provided to the Agent

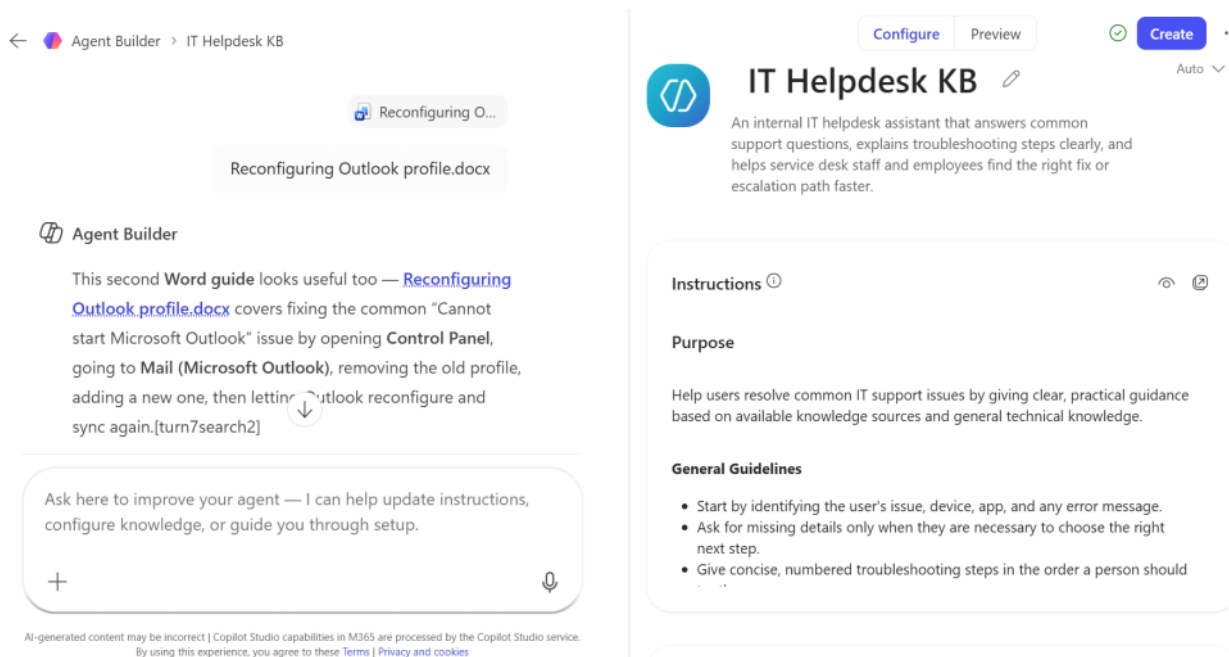


Figure 7. Providing agent with a knowledge document

As shown in Fig.7, the initial user interface has been kept deliberately simple to support this proof of concept. The emphasis is on demonstrating the application's functionality, navigation, and user interactions rather than a polished user experience at this stage.

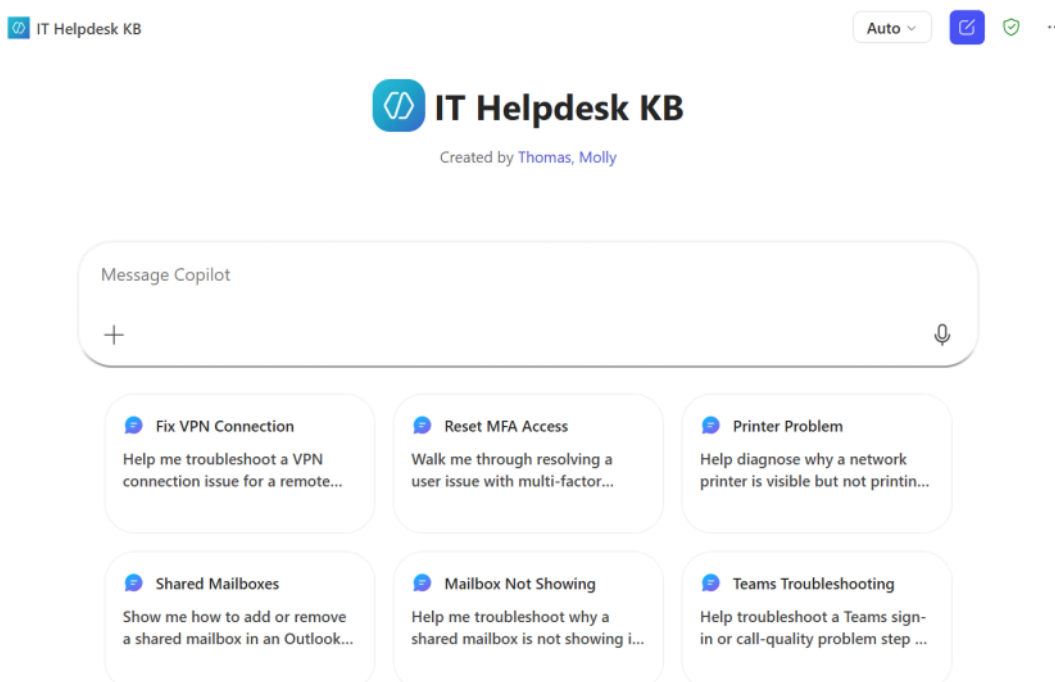


Figure 8. Helpdesk Agent Interface for End-User

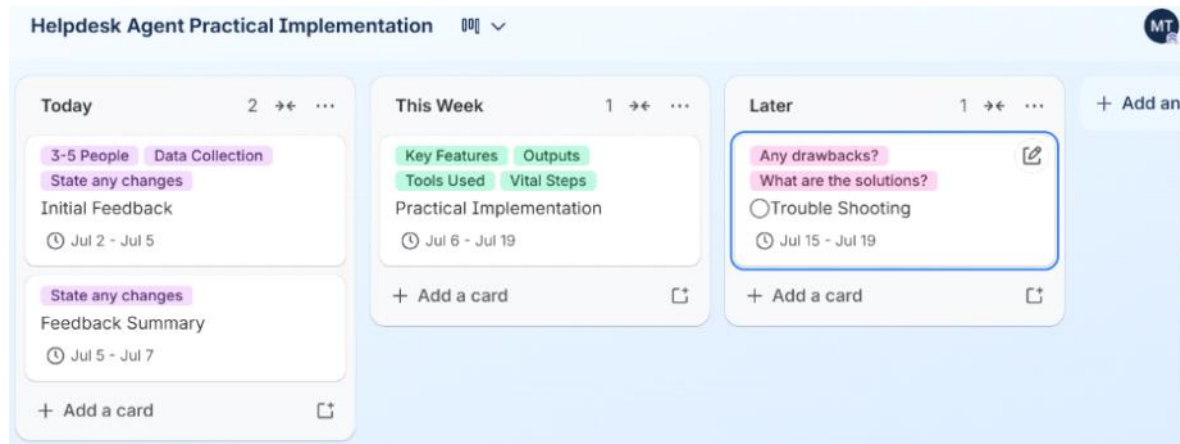
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Appendices

Appendix A - Use of a Project Management tool (Trello)

<https://trello.com/invite/b/6a282770f33e2439a02c00ad/ATTI6b61e37dc59c03a46d33880d767b0518D81CDD18/helpdesk-agent-practical-implementation>



Appendix B - Microsoft Learn Module ([Build an initial agent with Microsoft Copilot Studio](#))

JUN 4

Well done! You completed a module.

MODULE

Build an initial agent with Microsoft Copilot Studio

39 min

✓ Completed

Introduction	3 min	✓
Agent creation	8 min	✓
Agent creation using conversational builder	12 min	✓
Generative Answers	5 min	✓
Deploy agents	4 min	✓
Check your knowledge	6 min	✓
Summary	1 min	✓

Appendix C – LinkedIn Learning Certificate: IT Service Desk Management Fundamentals



Appendix D - Agile Scrum Board created in Microsoft PowerPoint

