



Using ChatGPT to Accelerate Creation of Business Case and Project Definition Documents

By Dennis D. McDonald Ph.D. and Michael Kaplan PMP***

Introduction

We are researching how to employ Large Language Model (LLM) tools such as ChatGPT to create project planning documents. In [Getting Real About Using AI To Support Project Management: Designing a Baseline Demonstration Project](#) we suggested a two-phased approach for a demonstration project:

1. Phase One will be devoted to the creation of project planning documents with the support of an LLM tool such as ChatGPT.
2. Phase 2 will be a test of using a LLM such as ChatGPT to support the actual management of the project.

In this article we provide more detail about Phase One based on work we've done to partially automate the production of two key project planning documents:

1. The Business Case Document outlines management's business reasons for applying resources to a project.
2. The Project Definition Document, which the LLM tool creates from the Business Case Document, outlines the steps that project managers must take to actually perform the project.

The sequence of ChatGPT-supported actions is straightforward and fast. In response to a specific problem statement, ChatGPT generates a business case based on a template the LLM helps to develop

or based on a model already used by the organization. Then in response to the LLM-generated generated business case, ChatGPT generates the project definition document which can then be used for detailed planning.

By now it is well known that it is possible to interact with a tool such as ChatGPT in plain English and receive output in plain English as well. From the outset of our research, however, we have been investigating (especially Michael with his Python scripts!) how best to interact with ChatGPT while ensuring that what ChatGPT delivers responds to the actual organizational and technical context in which the planned project will be managed.

Workflow and System Components

The workflow we're considering has three main components: the Problem Statement, the Business Case Document, and the Project Definition Document.

1. Problem Statement

The manager-supplied problem statement tells the LLM what type of project we need to create a business case for. Here are three examples, each of which can be stated in varying levels of detail:

- "Create a business case for a project to implement Microsoft Project Server in my company."
- "Create a business case for a project to implement a zero-trust security model throughout our organization."
- "Create a business case to combine our organization's three data centers into a single data center."

When we submit such statements in raw form to ChatGPT without any special contextual information, the LLM can respond with reasonable sounding output—the draft of a business case—but potentially at a level of generality that may miss important considerations for the organization making the request. We have therefor developed a template-based approach for creating the Business Case Document.

2. Business Case Document

The business case template is designed to be processed by the LLM tool to generate a business case document that reflects the specific needs of the organization. The business case template has two parts:

1. An outline of the desired contents of the business case stated in terms of headers, sub headers, and paragraph (see Appendix A1 for an example).
2. A set of Python scripts linked to the outline that prompts the LLM tool on what each section and subsection of the business case should contain (see Appendix A2 for example).

Appendix A3 shows a sample from an output business case document.

Some organizations have specific business case models they use for evaluating distinct types of projects. These can be used as models or templates for how we want the LLM tool to respond to the problem statement. Others leave business case methodology up to contractors or consultants. Or we can use the LLM tool itself to help construct the basic business case model. We have experimented with all three approaches and have found that ChatGPT can help compare, edit, and synthesize business case approaches very quickly.

3. Project Definition Document

What we next want the LLM to do is to read the business case and, in response, draft the project definition document. Again, much of this can be done in plain English. As with the business case document we have also found it desirable to employ a content template and a linked set of Python scripts to prompt the LLM tool how to process the business case in its generation of the project definition document. This template reflects the specific needs of the organization via two main parts:

1. An outline of the desired contents of the project definition document stated in terms of headers, subheaders, and paragraphs (see Appendix B1 for an example).
2. A set of Python scripts that prompts the LLM on what each section and subsection of the project definition document should contain, given the input from the business case (see Appendix B2 for example).

Appendix B3 shows a sample from an output project definition document.

Discussion

Each of the authors has been involved with project management and consulting for many years. Based on our experiments we believe the processes described above can significantly accelerate project planning and project initiation. Questions we want to investigate further include (1) how much faster? and (2) at what cost?

The methods described above can also be applied to a variety of other project planning documents related to risk management, issue resolution, cybersecurity, change management, communications, and other project management functions. These can all use input from the problem statement, business case, and project definition as the basis for detailed—and accelerated—planning.

We expect that much of the step by step work we have done to test out the above workflow will be eventually automated, including the automated development of prompting scripts to drive both the structure and content of output documents.

While we have been impressed with the quality of output that can be generated quickly just given the input of an English language problem statement, we are also finding it essential to incorporate human editing and review processes to capture needed corrections or changes. We are currently examining ways to incorporate editing and review processes. Given that document production can proceed so rapidly using the process outlined above, traditional delays between document drafting, document review, and document approval can, we now believe, be significantly shortened.

The testing we have done so far has focused on the creation of formatted and complete Word documents suitable for human review. Targeting online or web-based formatting instead of using the above approach should be straightforward.

Conclusion

Working faster and smarter is the goal. We believe that LLM tools such as ChatGPT will be “force multipliers” when properly used by savvy project managers. We also believe that the above process must be guided by experienced professionals and project managers who understand the needs of the organization and can express those needs in how templates and documents are constructed, edited, and reviewed.

Appendix A1: Business Case Table of Contents

The screenshot shows the Microsoft Word interface with the following elements:

- File Name:** b04_bizcase_publish_final - Compatibility Mode
- Language:** Michael Kaplan
- Menu Bar:** File, Home, Insert, Draw, Design, Layout, References, Mailings, Review, View, Help
- Home Tab Ribbon:** Clipboard, Font (Cambria (Body), 11), Paragraph, Styles, Editing, Dictate, Sensitivity, Reuse Files, Editor
- Table of Contents:**

Table of Contents

Executive Summary2

Background and Problem Statement3

Objectives and Benefits3

Analysis and Feasibility3

Proposed Solution and Approach4

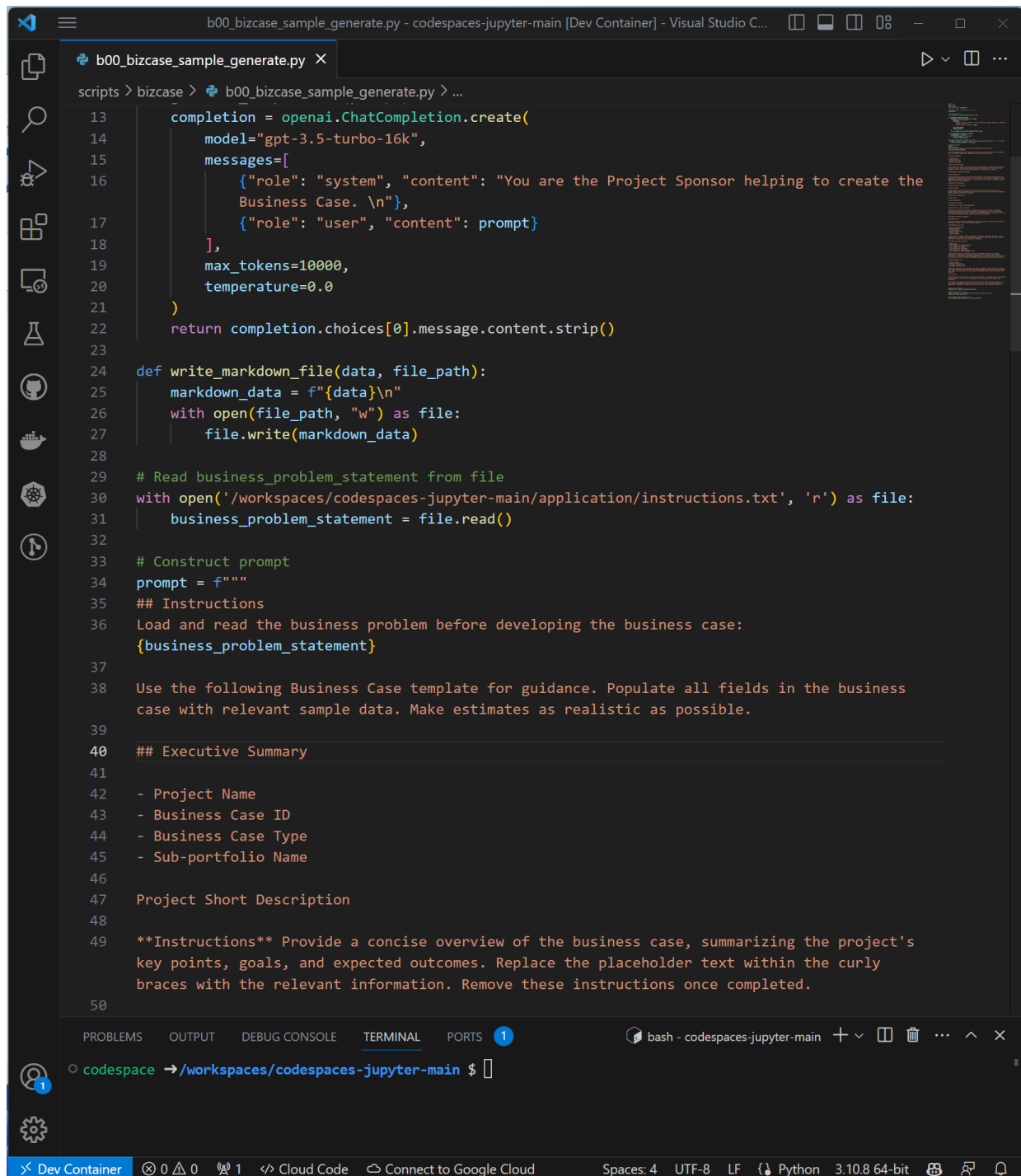
Financial Analysis and Costs5

Implementation Plan5

Conclusion5

Change Log6
- Status Bar:** Page 1 of 6, 1243 words, Text Predictions: On, Accessibility: Investigate, Focus, 110%

Appendix A2: Business Case Scripts Sample



```
13 completion = openai.ChatCompletion.create(
14     model="gpt-3.5-turbo-16k",
15     messages=[
16         {"role": "system", "content": "You are the Project Sponsor helping to create the
17         Business Case. \n"},
18         {"role": "user", "content": prompt}
19     ],
20     max_tokens=10000,
21     temperature=0.0
22 )
23 return completion.choices[0].message.content.strip()
24
25 def write_markdown_file(data, file_path):
26     markdown_data = f"{data}\n"
27     with open(file_path, "w") as file:
28         file.write(markdown_data)
29
30 # Read business_problem_statement from file
31 with open('/workspaces/codespaces-jupyter-main/application/instructions.txt', 'r') as file:
32     business_problem_statement = file.read()
33
34 # Construct prompt
35 prompt = f"""
36 ## Instructions
37 Load and read the business problem before developing the business case:
38 {business_problem_statement}
39
40 Use the following Business Case template for guidance. Populate all fields in the business
41 case with relevant sample data. Make estimates as realistic as possible.
42
43 ## Executive Summary
44
45 - Project Name
46 - Business Case ID
47 - Business Case Type
48 - Sub-portfolio Name
49
50 Project Short Description
51
52 **Instructions** Provide a concise overview of the business case, summarizing the project's
53 key points, goals, and expected outcomes. Replace the placeholder text within the curly
54 braces with the relevant information. Remove these instructions once completed.
55
56 """
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS 1

codespace → /workspaces/codespaces-jupyter-main \$

Dev Container 0 1 Cloud Code Connect to Google Cloud Spaces: 4 UTF-8 LF Python 3.10.8 64-bit

Appendix A3: Business Case Output Sample

AutoSave b04_bizcase_publish_final - Compatibility Mode - Saved to this PC

File Home Insert Draw Design Layout References Mailings Review View Help Comments Editing Share

Business Case (FINAL)

Executive Summary

- Project Name: AI-powered Project Innovation Catalyst
- Business Case ID: BC-001
- Business Case Type: New Project
- Sub-portfolio Name: Innovation and Transformation

- Project Short Description: The AI-powered Project Innovation Catalyst is a system that will analyze project requirements, team dynamics, and external market trends to identify potential areas for innovation within projects. By leveraging generative AI, the Catalyst will generate creative ideas, alternative approaches, and novel solutions to drive innovation and differentiation. It will assist project managers and teams in exploring unconventional strategies, disruptive technologies, and out-of-the-box thinking to push the boundaries of project outcomes. The AI will also provide insights on the feasibility, risks, and potential impact of innovative ideas, empowering project teams to make informed decisions and foster a culture of innovation within organizations. This Project Innovation Catalyst has the potential to unlock new opportunities, enhance competitiveness, and drive transformative change in project management practices.

Background and Problem Statement

Project Background: In today's rapidly changing business landscape, organizations need to continuously innovate to stay competitive and drive growth. However, identifying innovative ideas and approaches within projects can be challenging. Project teams often rely on traditional methods and may not have access to the latest market trends or disruptive technologies. This leads to missed opportunities and limited differentiation in project outcomes.

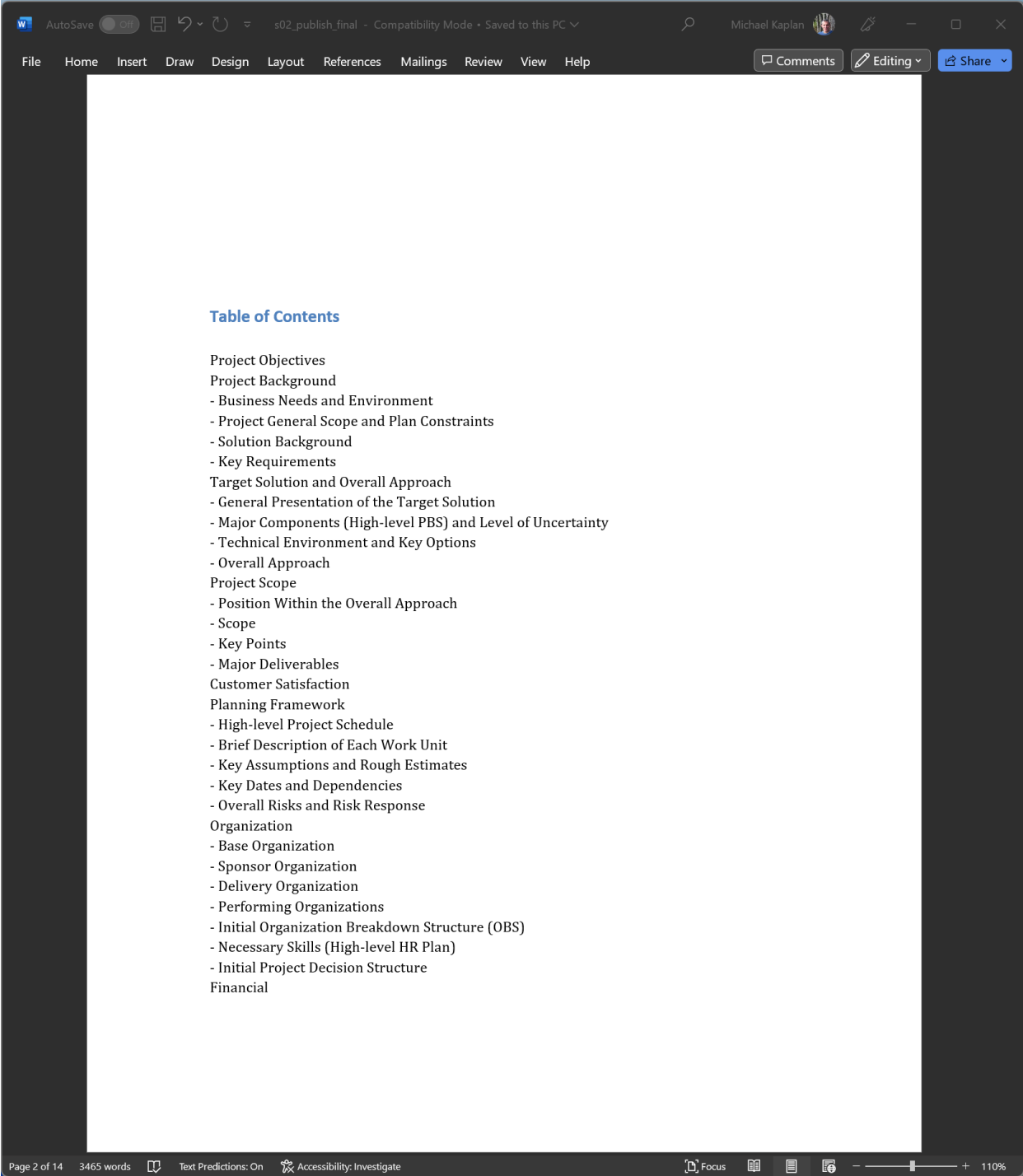
Problem Statement: The lack of a systematic approach to identify and foster innovation within projects hinders organizations' ability to drive transformative change and stay ahead of the competition. There is a need for a solution that can analyze project requirements, team dynamics, and external market trends to identify potential areas for innovation and provide creative ideas and alternative approaches to project teams.

Objectives and Benefits

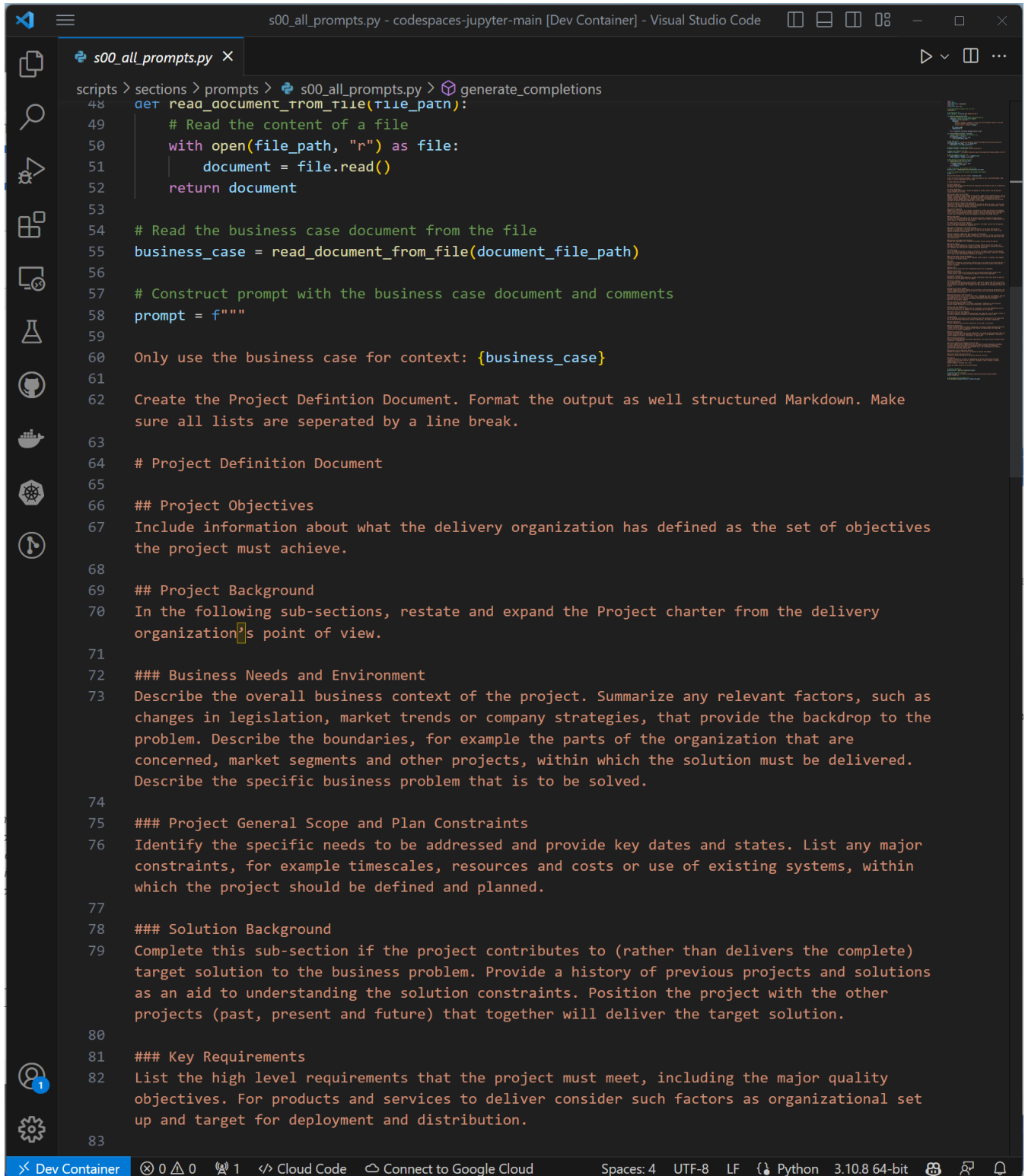
Business Outcomes Objectives:

Page 1 of 5 1209 words Text Predictions: On Accessibility: Investigate Focus 110%

Appendix B1: Project Definition Document Table of Contents



Appendix B2: Project Definition Document Script Sample



```
scripts > sections > prompts > s00_all_prompts.py > generate_completions
48 def read_document_from_file(file_path):
49     # Read the content of a file
50     with open(file_path, "r") as file:
51         document = file.read()
52     return document
53
54 # Read the business case document from the file
55 business_case = read_document_from_file(document_file_path)
56
57 # Construct prompt with the business case document and comments
58 prompt = f"""
59
60 Only use the business case for context: {business_case}
61
62 Create the Project Definition Document. Format the output as well structured Markdown. Make
63 sure all lists are separated by a line break.
64
65 # Project Definition Document
66
67 ## Project Objectives
68 Include information about what the delivery organization has defined as the set of objectives
69 the project must achieve.
70
71 ## Project Background
72 In the following sub-sections, restate and expand the Project charter from the delivery
73 organization's point of view.
74
75 ### Business Needs and Environment
76 Describe the overall business context of the project. Summarize any relevant factors, such as
77 changes in legislation, market trends or company strategies, that provide the backdrop to the
78 problem. Describe the boundaries, for example the parts of the organization that are
79 concerned, market segments and other projects, within which the solution must be delivered.
80 Describe the specific business problem that is to be solved.
81
82 ### Project General Scope and Plan Constraints
83 Identify the specific needs to be addressed and provide key dates and states. List any major
84 constraints, for example timescales, resources and costs or use of existing systems, within
85 which the project should be defined and planned.
86
87 ### Solution Background
88 Complete this sub-section if the project contributes to (rather than delivers the complete)
89 target solution to the business problem. Provide a history of previous projects and solutions
90 as an aid to understanding the solution constraints. Position the project with the other
91 projects (past, present and future) that together will deliver the target solution.
92
93 ### Key Requirements
94 List the high level requirements that the project must meet, including the major quality
95 objectives. For products and services to deliver consider such factors as organizational set
96 up and target for deployment and distribution.
97
98 """
```


Appendix B3: Project Definition Document Output Sample

AutoSave Off Undo Redo Print Refresh Close s02_publish_final - Compatibility Mode - Saved to this PC Search Michael Kaplan Share Print Close

File Home Insert Draw Design Layout References Mailings Review View Help Comments Editing Share

Project Definition Document

Project Objectives

The project objectives are defined by the delivery organization and outline the set of goals that the project must achieve. The objectives of the AI-powered Project Innovation Catalyst are as follows:

1. Foster a culture of innovation within organizations: The Catalyst aims to create an environment that encourages and supports innovative thinking and approaches within project teams.
2. Identify and explore unconventional strategies and disruptive technologies: The project will analyze project requirements, team dynamics, and external market trends to identify potential areas for innovation. It will enable project teams to explore unconventional strategies and leverage disruptive technologies to drive innovation.
3. Generate creative ideas, alternative approaches, and novel solutions for projects: The Catalyst will leverage generative AI to generate creative ideas, alternative approaches, and novel solutions that can enhance project outcomes and differentiate from competitors.
4. Enhance project outcomes and differentiate from competitors: By providing innovative ideas and approaches, the Catalyst aims to improve project outcomes and enable organizations to differentiate themselves from their competitors.
5. Empower project teams to make informed decisions based on feasibility, risks, and potential impact of innovative ideas: The project will provide insights on the feasibility, risks, and potential impact of innovative ideas, empowering project teams to make informed decisions and drive successful project delivery.

These objectives align with the overall goal of the project, which is to unlock new opportunities, improve project outcomes, and drive significant benefits for organizations.

Project Background

Business Needs and Environment

In today's rapidly changing business landscape, organizations need to continuously

Page 4 of 14 3465 words Text Predictions: On Accessibility: Investigate Focus Print Refresh Close Zoom: 110%

About the Authors

****Dennis D. McDonald, Ph.D.***

Dennis' writing, editing, and research work combines analytical and communication skills with extensive project management experience. His industry work includes support for civilian and military contractors, higher ed data governance, corporate database and software consolidation and retirement, adoption of collaborative technologies for knowledge sharing, and open data system development. His writing and content development work includes proposals (business and technical), project planning, research reports and white papers, and market research. He is a member of Alexandria Virginia's Public Records Advisory Commission and a volunteer for the Alexandria Film Festival. He has served as a private school Board of Trustees member and has been a part owner of an IT-focused consulting company. He is a AAAS member and CMMC Registered Practitioner (RP). His web site is located at www.ddmcd.com and his email address is ddmcd@ddmcd.com.

****Michael Kaplan, PMP**

Michael Kaplan is a highly successful Senior Program Manager with over two decades of experience delivering impressive results for enterprises. His expertise in program management, project management, and digital transformation has enabled him to protect the national power grid and secure the critical systems of six global banks against cyberattacks. He has also played a pivotal role in enabling 30 organizations to transition into digital enterprises, implementing VMware software and leveraging Agile, Waterfall, and hybrid methodologies. Michael has excelled in team management, leadership, communication, and collaboration. He is certified as a Project Management Professional, Certified Scrum Master, and ITIL, and proficient in the use of various tools. Michael has worked with a broad range of clients in the financial and insurance sectors, healthcare, educational institutions, and government agencies. His natural talent for connecting the dots across people, process, and technology domains, his commitment to delivering excellence, and his professionalism make him a highly respected Program Project Management Consultant. He can be reached via email at kaplan.usa@gmail.com.

Copyright © 2023 by Dennis D. McDonald and Michael Kaplan