

The Future of Proposal Writing: AI and Human Collaboration in Action

This guide explores how artificial intelligence is transforming the way organizations create, manage, and optimize proposals. It explores how teams can leverage past performance data, project insights, and AI-driven prompting techniques to streamline workflows and improve quality. It also highlights the balance between automation and human expertise, showing how AI tools enhance, not replace, the human touch in winning proposals.

Overview

The Future of Proposal Writing: AI and Human Collaboration in Action



AI for proposals – benefits and considerations

Leveraging past proposals, project data, and personnel information.

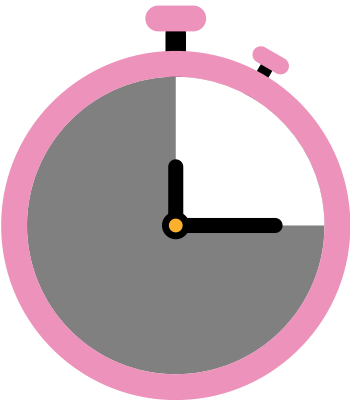
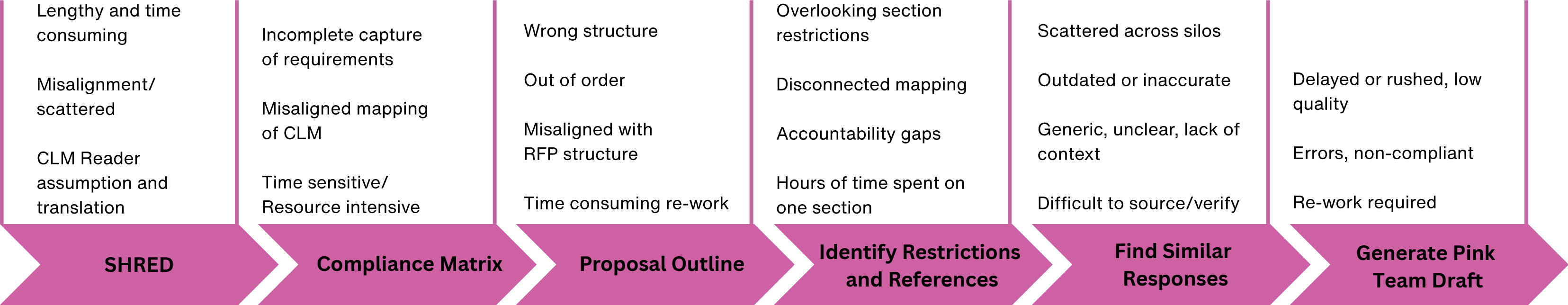
Good prompting techniques that improve output quality.

Risks of relying on prompts alone and the need for structured workflows.

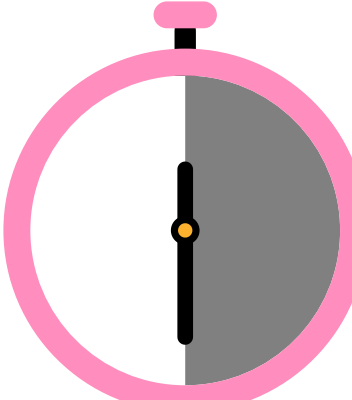
Conclude with a look at AI + human collaboration in action with ProposalAI.

Proposals

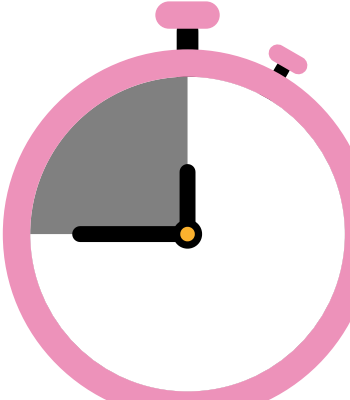
How they run it manually



3-5 Hours
RFI



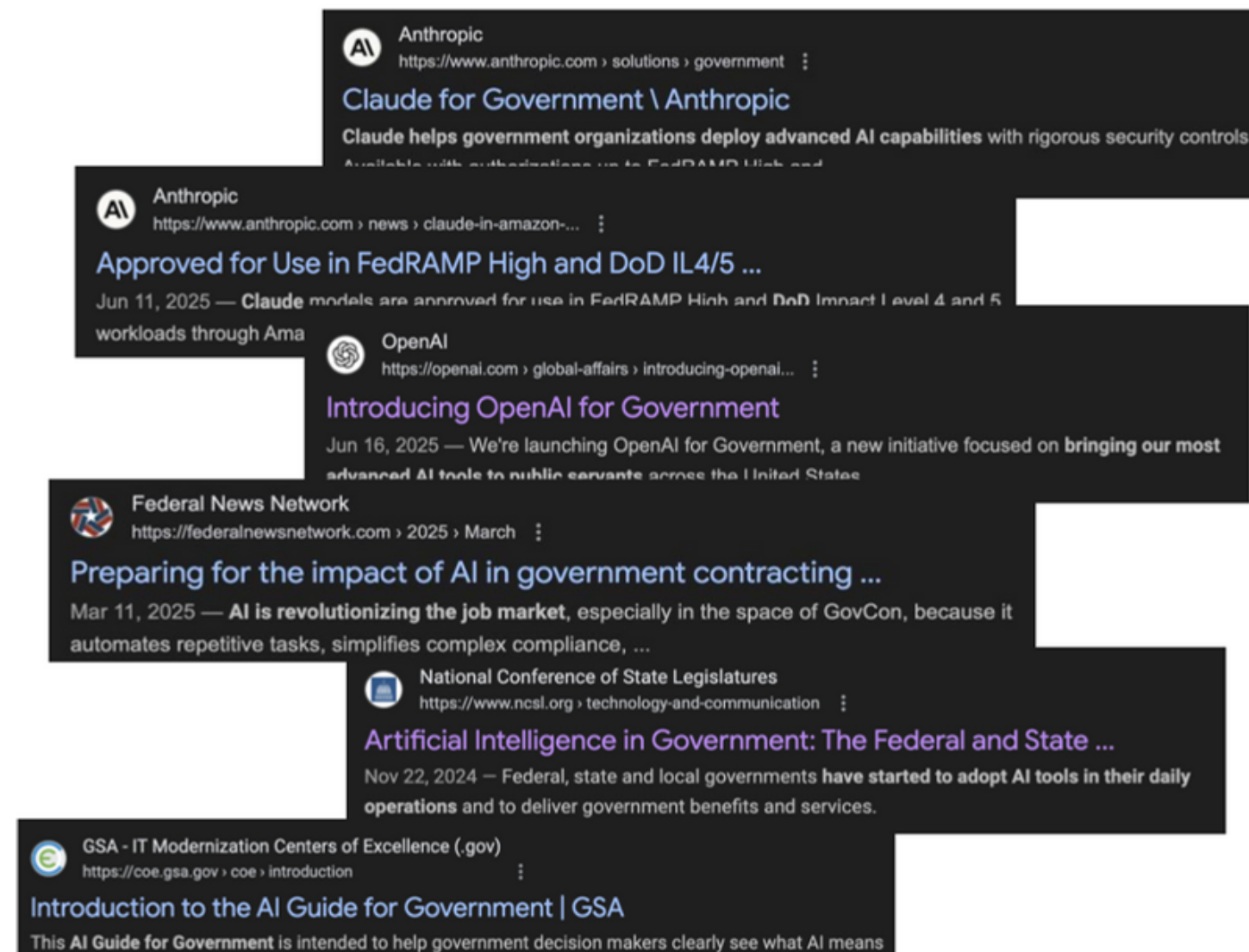
30-50 Hours
Simple RFP



70-100 Hours
Complex RFP

The Government & AI

AI acceptance is increasing



- **LLM Providers:** Strengthening security infrastructure to manage sensitive government data, while offering low-cost services tailored for agencies.
- **Agencies:** Actively formalizing agreements with AI vendors to embed emerging technologies into operations.
- **GovCons:** Accelerating AI investment with reduced hesitation, influenced by LLM advancements and agency adoption.
- **PE/VC:** Investing in AI solution for GovCons, the government, and agencies.

RAG and GenAI

AI and Proposals

Generative AI is technology that creates new content—like text, images, or code—by learning patterns from massive amounts of data. It doesn't just copy; it generates original outputs based on the prompt it's given.

Retrieval Augmented Generation (RAG) is when AI pulls information from multiple data sources and uses it to generate an answer. It first finds the most relevant pieces of data, then writes a response based on that information—making the output more accurate and up to date.



Massachusetts
Institute of
Technology

With AI, writers are

30%

Spending
less time

50%

and
producing
more



GOVBREW



Unanet

Fuel your AI

What data to use for proposals

Write a super sweet proposal using my library

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Previous Proposals

Helps AI understand your tone, style, and what information to include



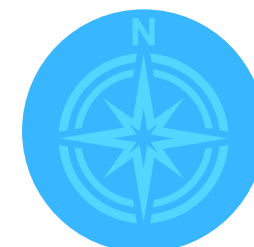
Project Data

Period of performance, scope of work, key deliverables, performance outcomes



Personnel Information

Name, role, experience, education, certifications, past project roles, and key accomplishments.



Anything... really

What else can the AI know that will help it generate a competitive depiction of your business?



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Fuel your AI

What data to use for proposals

Write a super sweet proposal using my library



**This prompt
won't cut it...**



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Basic Prompting

Context Setting in Proposal Writing

Importance of Context: In proposal writing, providing AI with the context of the solicitation, including:

- The customer,
- The specific problem statement, and
- The objectives of the project, is crucial.

This ensures the generated content is aligned with the government's needs.

Introducing Context: When asking AI to help draft a section of the proposal, start with a brief overview of the project's background, the target audience (e.g., federal agency), and the specific goals. For instance, "Draft an executive summary for a proposal addressing the Department of Energy's need for renewable energy integration solutions."

Be Explicit

Tailored Prompting

GOAL

Detailed Project Management
Plan



PROMPT

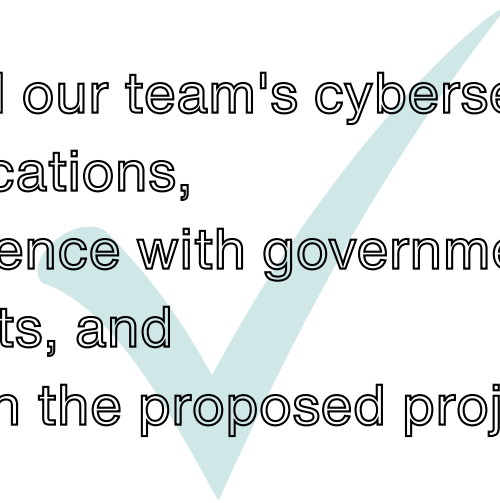
"Generate a project management plan outline that includes timelines, milestones, and risk management strategies for a cybersecurity upgrade project for the Department of Defense."

Avoid vague language

"Write about our team's
qualifications"



"Detail our team's cybersecurity certifications, experience with government projects, and roles in the proposed project."



Keys to Desired Output

Format, tone, and length



Formatting

If the solicitation document requires specific formats or sections, instruct the AI accordingly. For example, "Create a table listing the key personnel, their qualifications, and their roles in the project, following the format specified in the RFP."



Setting the Tone

The tone of a government proposal is typically formal and precise. Instruct the AI to match this tone, for example, "Write a formal description of our proposed solution, emphasizing innovation and cost-effectiveness."



Length Dictates Depth

Government proposals often have strict page limits or word counts for each section. Direct the AI to adhere to these limits, such as "Draft a project summary in no more than 200 words that highlights the innovation, team expertise, and the impact on the agency's mission."



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Advanced prompting

For proposals



Zero Shot vs Few Shot

i. How many past examples do you give it? If you have past examples to provide, that will produce the best results



Chain of Thought

i. Use the prompt phrase “Think step by step” to produce better results when you don’t have past examples



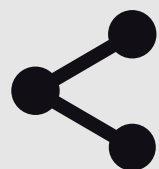
Persona based

i. Tell the AI how who it is and how you want it to respond “You are an experienced proposal writer for federal solicitations” and tell it to “avoid flowery language, no yapping”



Provide Context & Retrieval Augmented Generation

- i. Similar to a. you should provide and prompt the AI with the relevant pieces of information
- ii. You can use a prompt like “In your response, please only reference our company, and the agency we are proposing to. Do NOT reference other companies or agencies in this section”

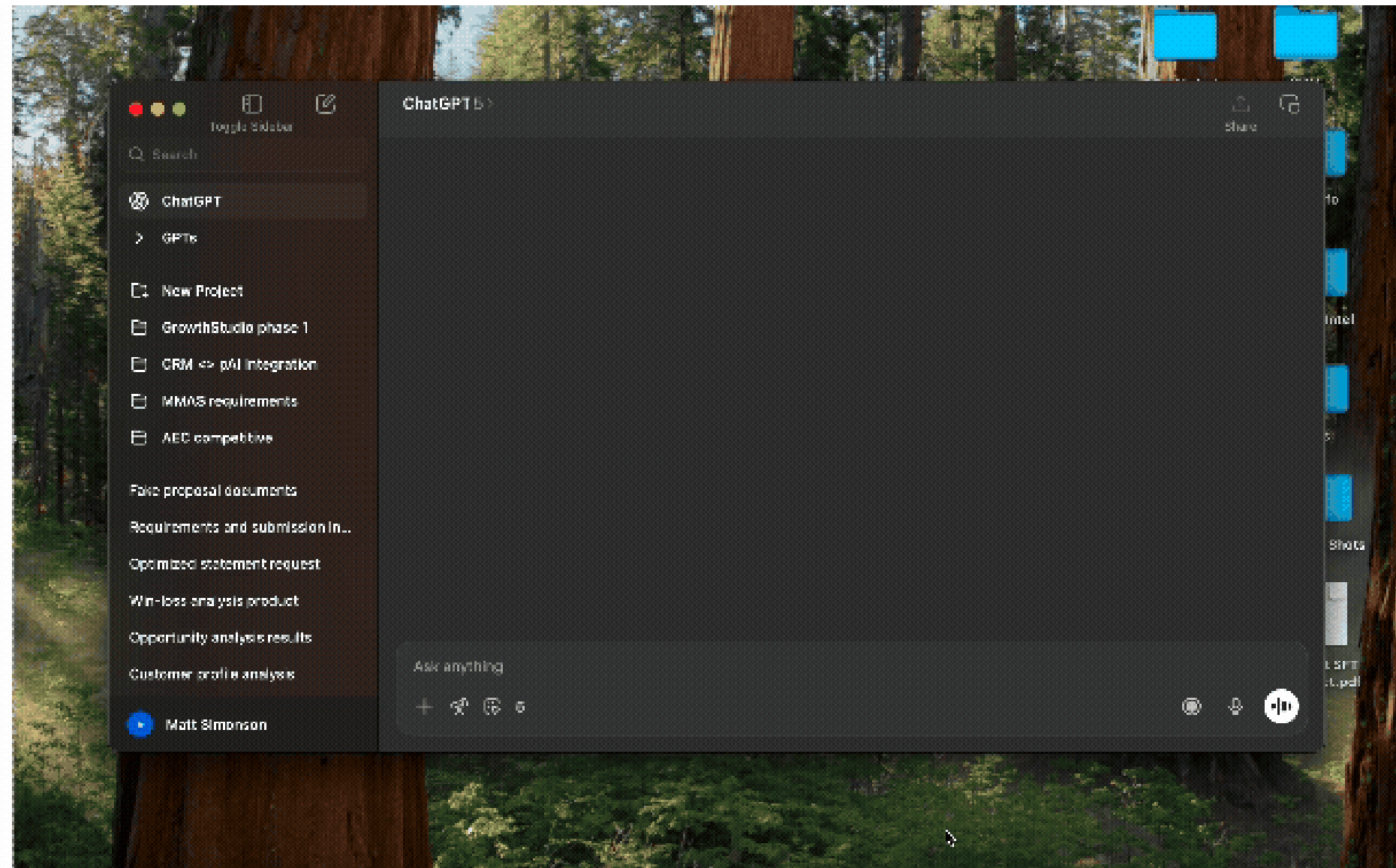


Context Window Optimization

i. Prepare the AI to receive information before responding by saying “I am first going to provide 5 examples of X and when I do, just answer OK. Then I will ask you to do Y by providing a prompt with the command “EXECUTE” ok?”

Leveraging your data

Use content to generate new proposals

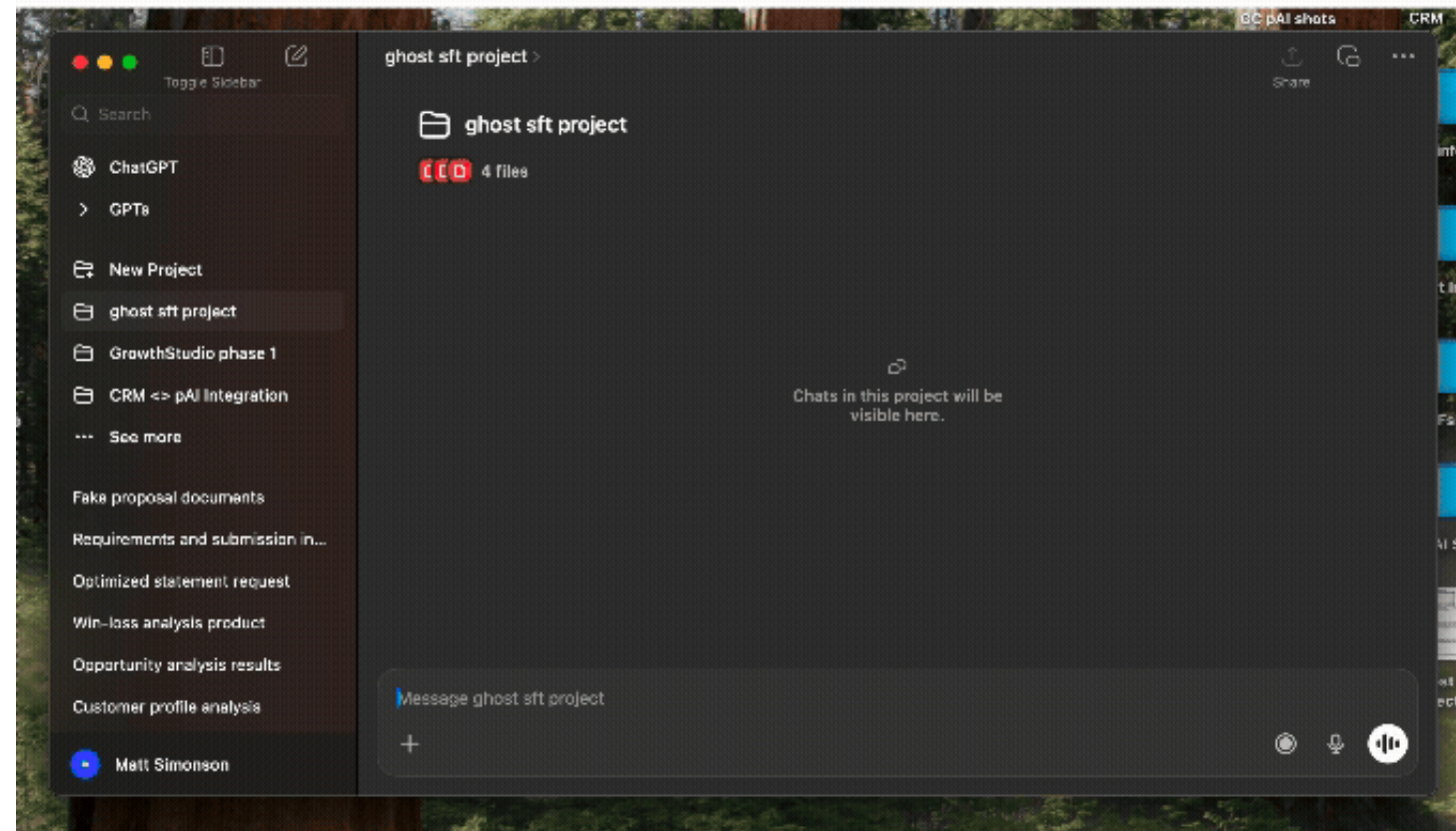


Set up a project folder: Setting up a project folder will ensure you can leverage context from previous conversations in one chat window.

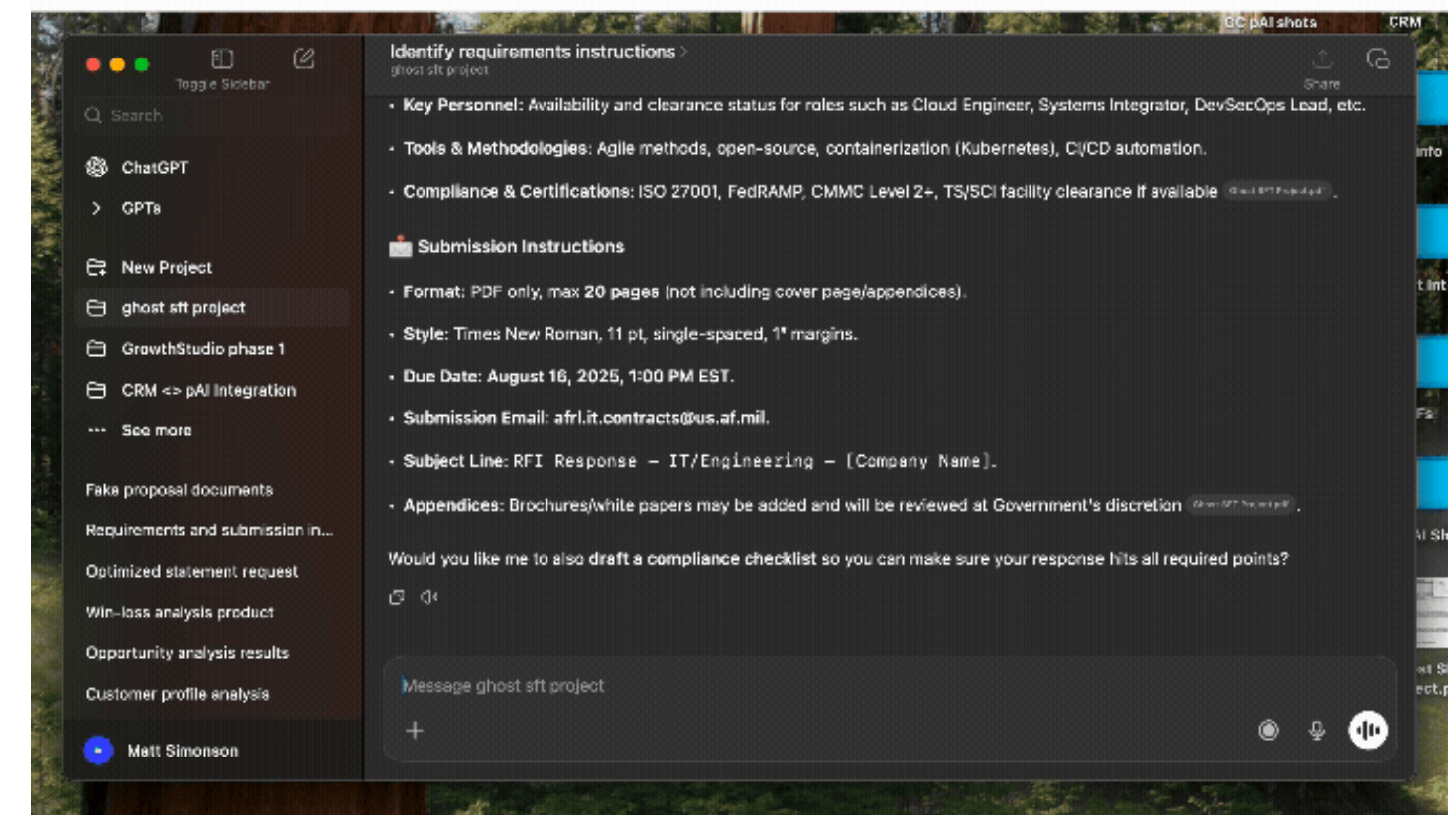
Upload materials: Uploading materials to a specific project – rather than relying on a GPT or previously uploaded materials – will ensure proper usage (content that is aligned, and impactful, current) of information

Understanding a Solicitation

Identifying requirements with ChatGPT



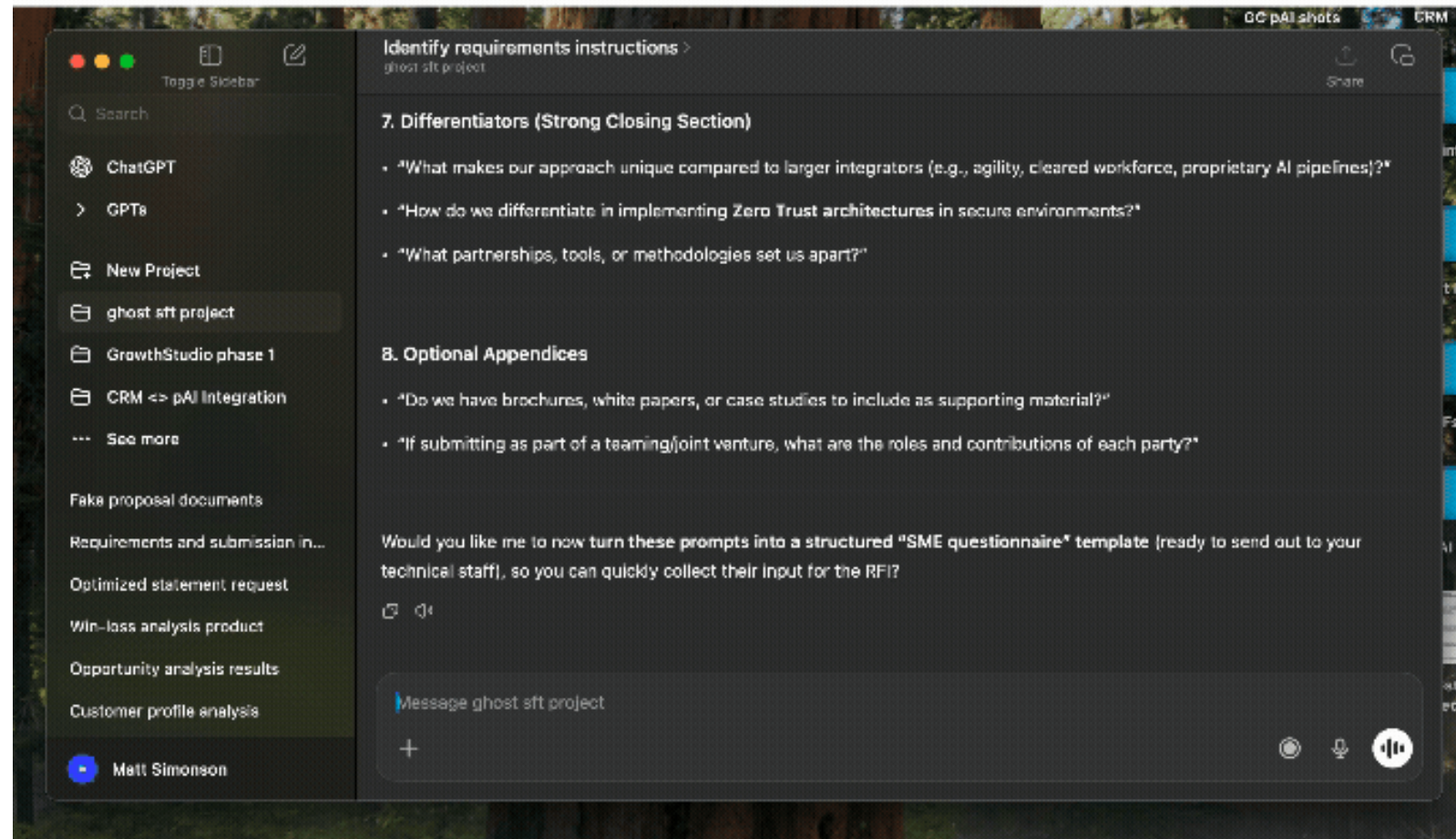
ID Requirements & Instructions: Read the RFI carefully to capture submission rules (page limits, formatting, due date, email address) and content requirements (corporate overview, past performance, capabilities, etc.). This ensures you know exactly what the government expects.



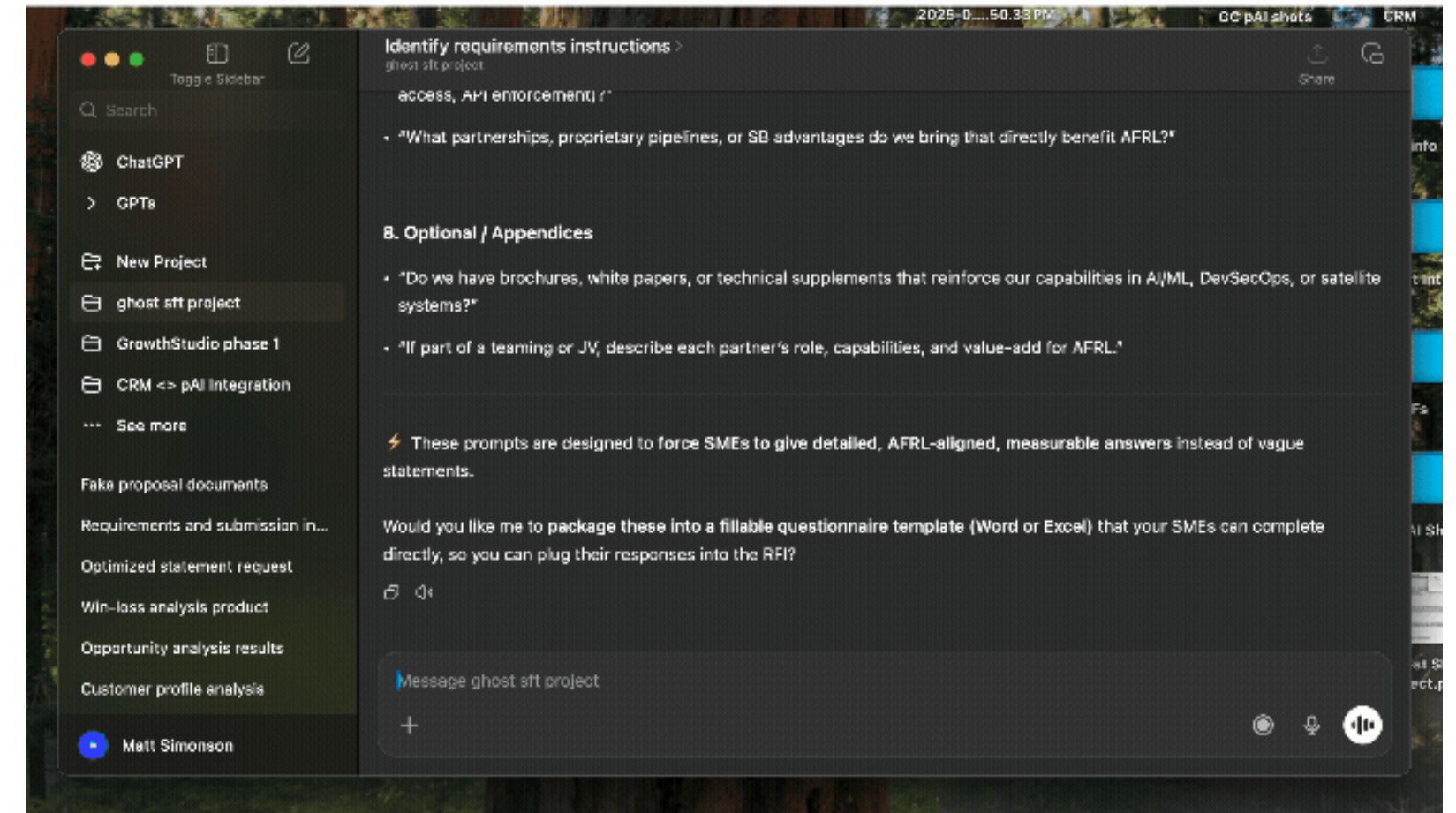
Generate compliance check-list: Turn the requirements into a checklist that covers formatting, submission instructions, and all mandatory content areas. Use this as a guide to track progress and verify completeness.

Utilizing Your Materials

Mapping requirements to responses



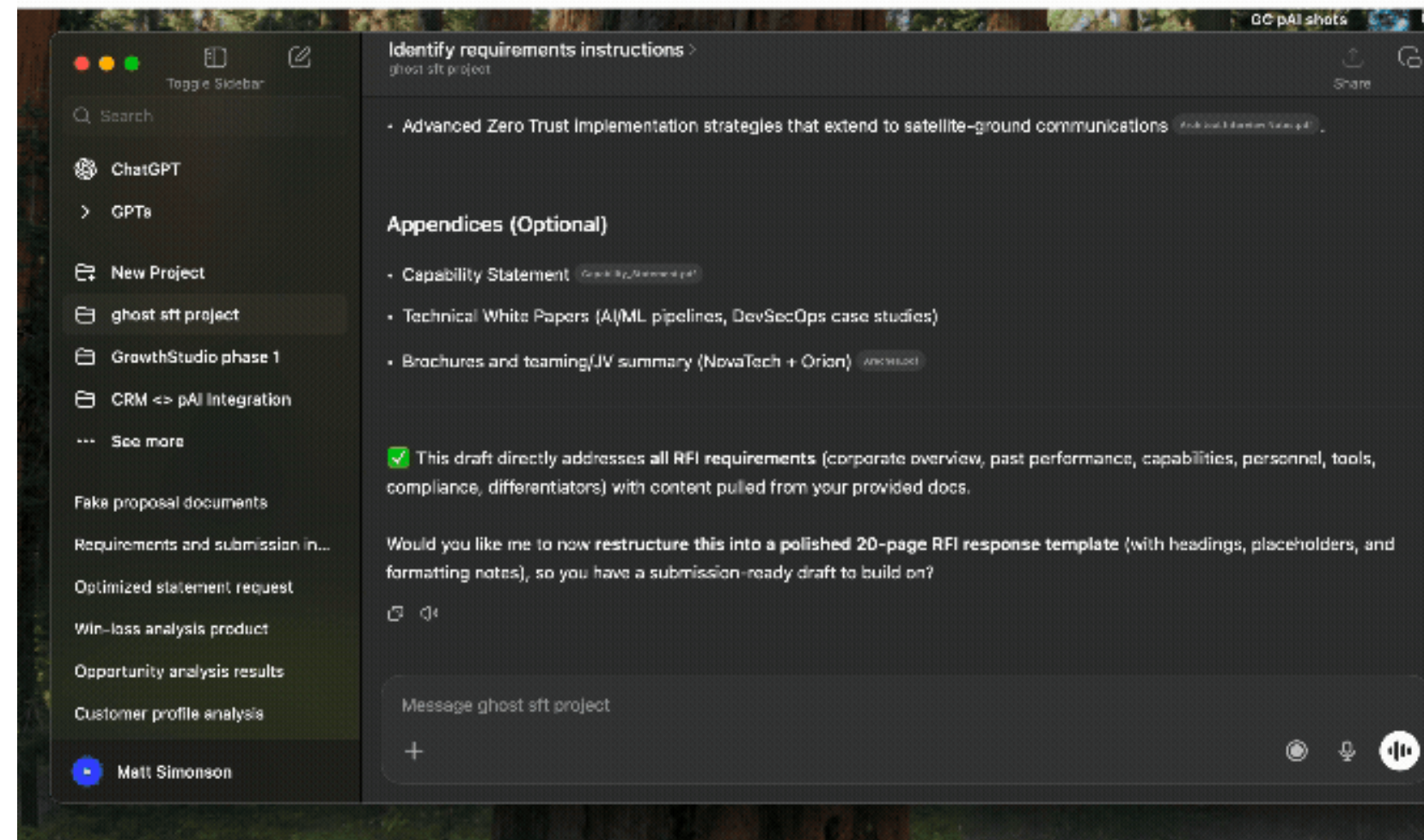
Ensure Understanding: Create detailed prompts or questions for SMEs and writers to answer. These prompts force full, specific responses that align with each RFI requirement.



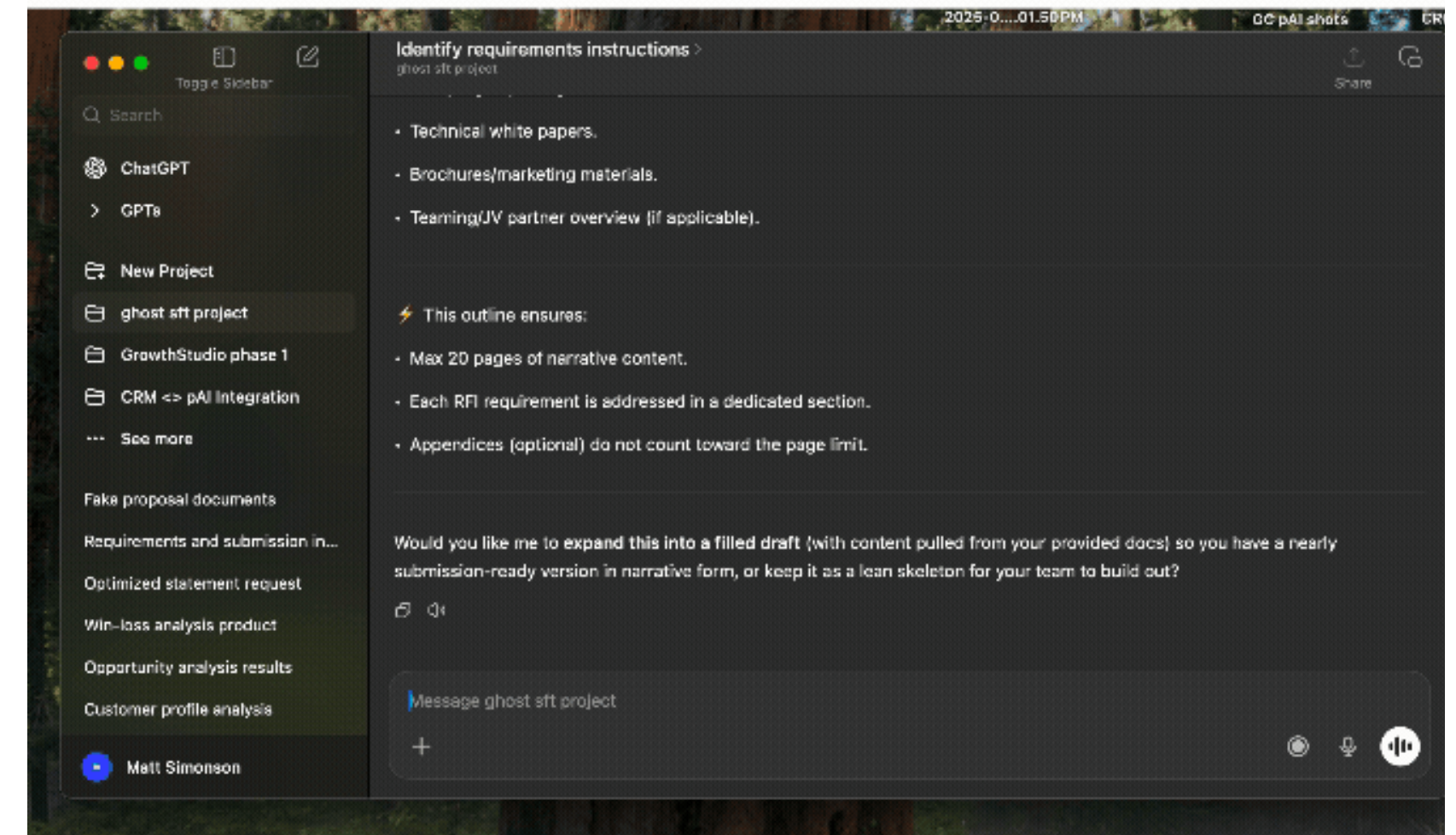
Pull content: Extract relevant material from your company's existing documents to answer the requirements. This reduces rework and ensures responses are grounded in proven capabilities.

Crafting an Outline

Sections and content



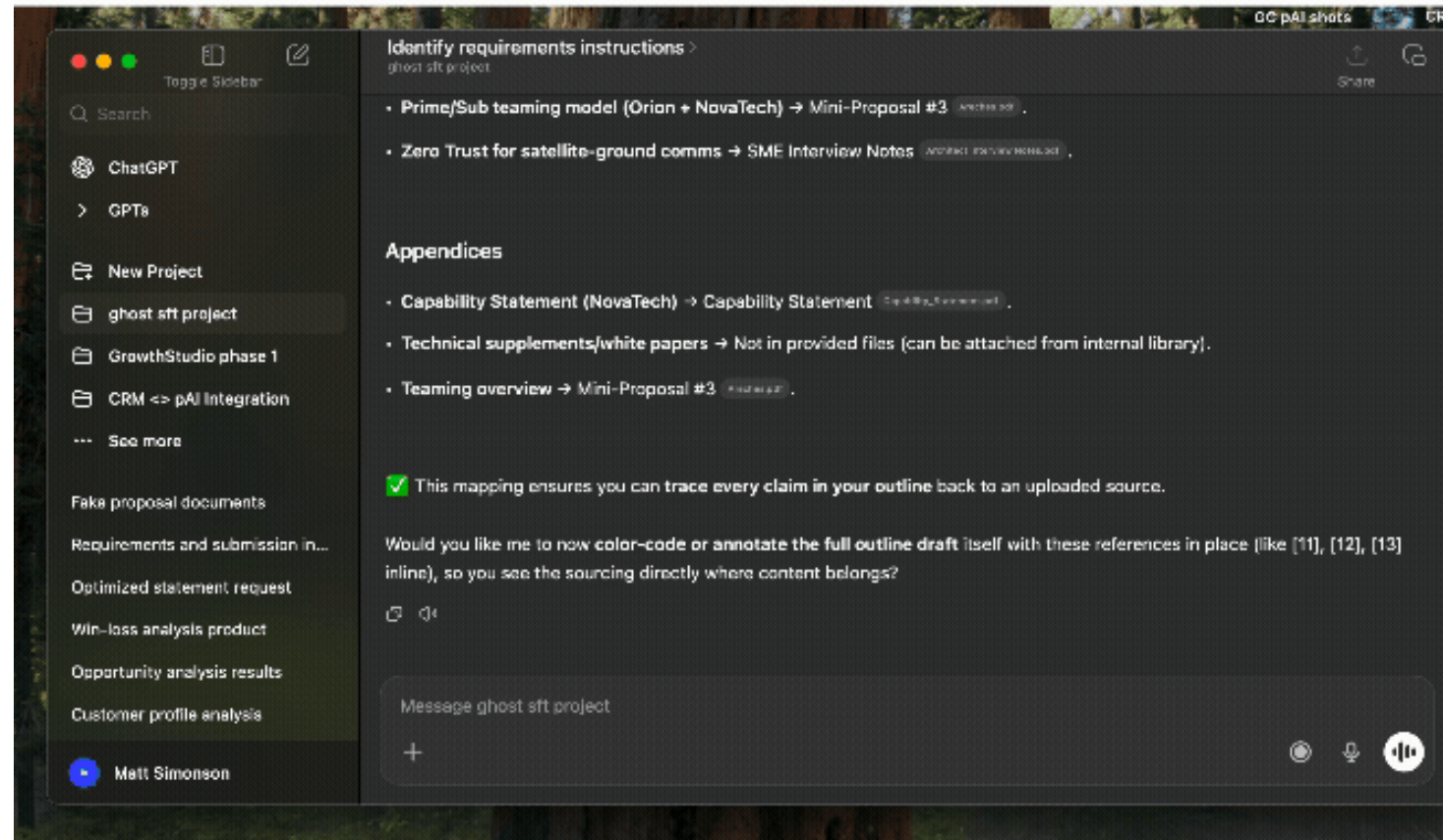
Format instructions: Build a structured outline based on the RFI's formatting rules (font, spacing, page limits). This provides a skeleton framework to draft the response in compliance.



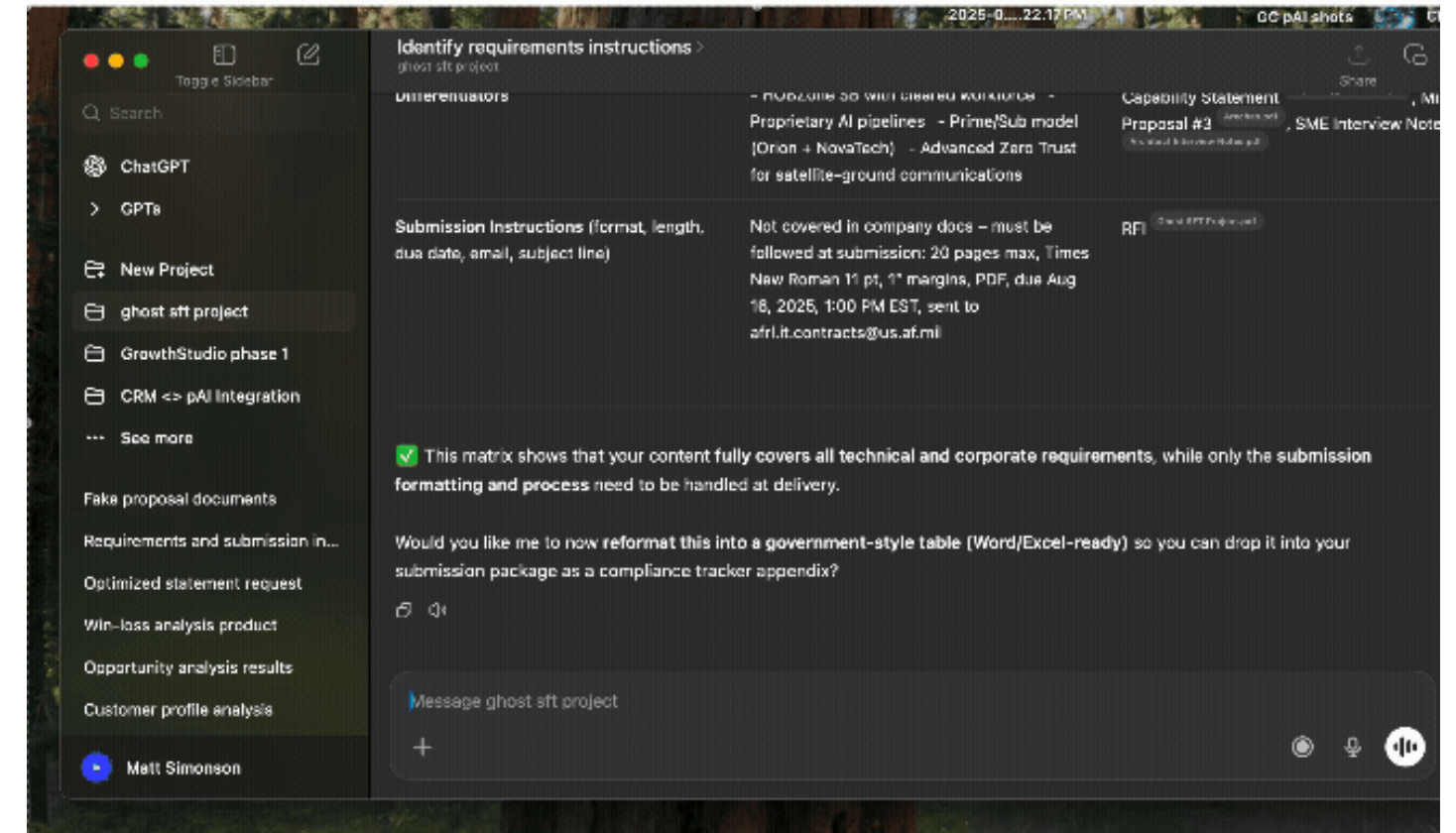
Map content and references: Match each outline section with the source document(s) used to fill it. This traceability ensures accuracy and makes it easy to defend claims or update information later.

Ensuring Compliance

Dont Miss a Requirement



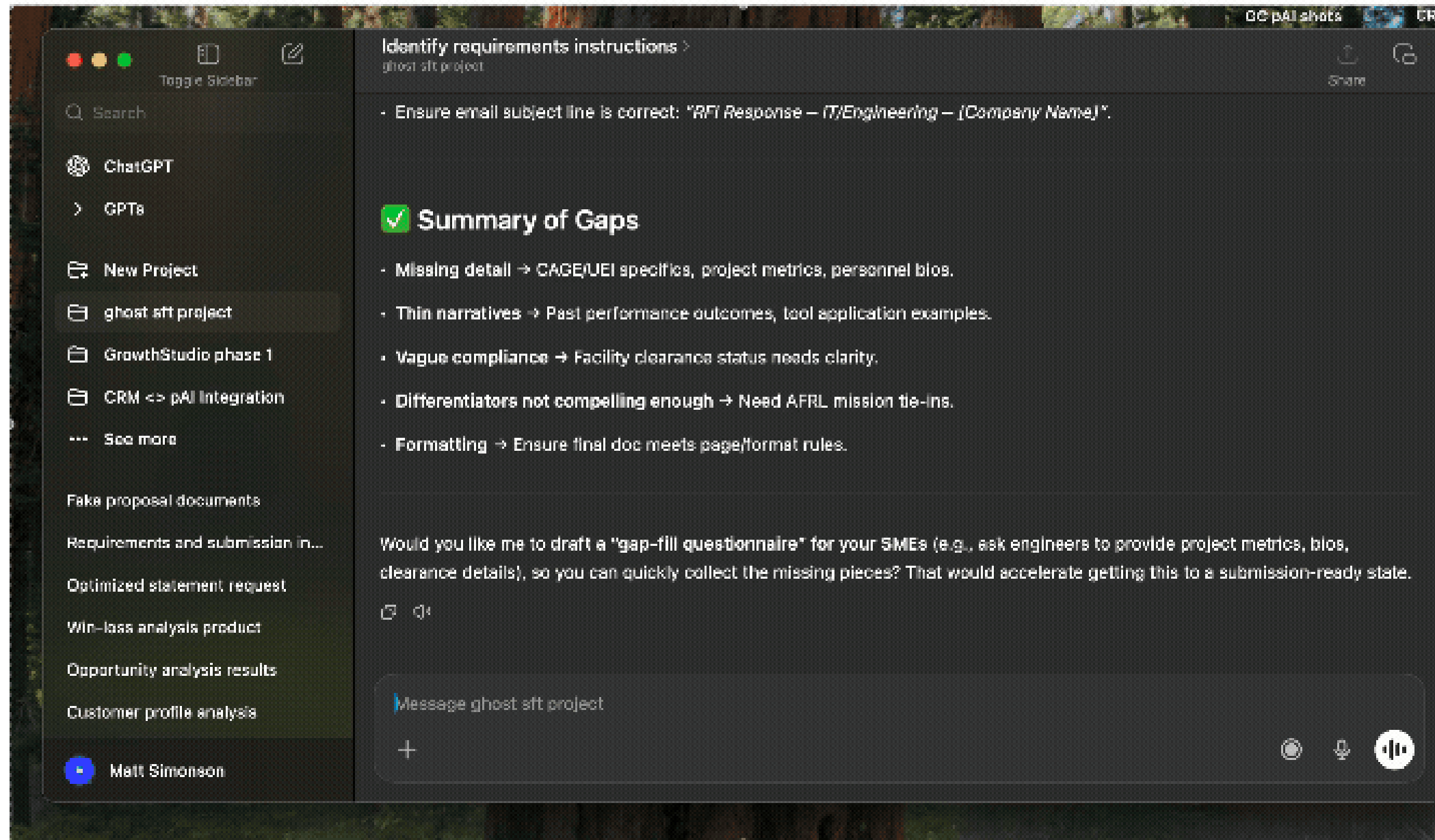
Generate compliance matrix: Create a table that links each RFI requirement to the corresponding response content and source. This confirms all requirements are addressed and strengthens internal review.



ID weak responses: Analyze the draft content to find gaps (e.g., missing metrics, thin bios, unclear compliance details). Document what's missing and what fixes are needed.

Generating Your First Draft

Take all the prompts and outputs to pink team



Strengthen Content – Ask it to expand past performance with measurable outcomes and refine personnel bios into 2–3 sentence summaries.

- **Sharpen Differentiators** – Reframe bullet points to show how they reduce AFRL's risk or speed delivery.

- **Create Tables/Visuals** – Use ChatGPT to draft tables (compliance, personnel, past performance) you can turn into graphics.

- **Q&A Responses** – Draft short, direct answers to AFRL's industry questions.

- **Red Team Review** – Ask ChatGPT to critique sections like an evaluator and flag gaps.

- **Final Polish** – Use it to unify tone, tighten language, and ensure clarity before submission

Generic LLMs and Proposals

Four horseman of the proposal apocalypse

Proposal writing workflow: ChatGPT lacks the structured workflows proposal teams need—storyboarding, reviews, compliance checks, and production. Without these, teams are forced into ad hoc processes that increase risk of missed requirements and inconsistent quality.

RAG Bias: When paired with document retrieval, ChatGPT often pulls unevenly from sources, overemphasizes irrelevant details, and can't explain why content was chosen. This lack of traceability forces writers to validate everything manually, undercutting efficiency gains.

Prompt Reliant: ChatGPT requires constant prompting for every task, making the process tedious and inconsistent. Output quality depends on user skill rather than a standardized proposal methodology, leading to fragmented drafts that demand heavy rework.

Siloed and disparate: As a standalone tool, ChatGPT doesn't integrate with proposal content libraries, pricing tools, or compliance systems. The result is siloed outputs that must be manually stitched together, slowing teams and creating inconsistencies.

Human in the Loop

Even with the right data, AI can't do it alone

What is "HITL"



Annotation

Humans provide AI with structured information to learn from, identify, and use



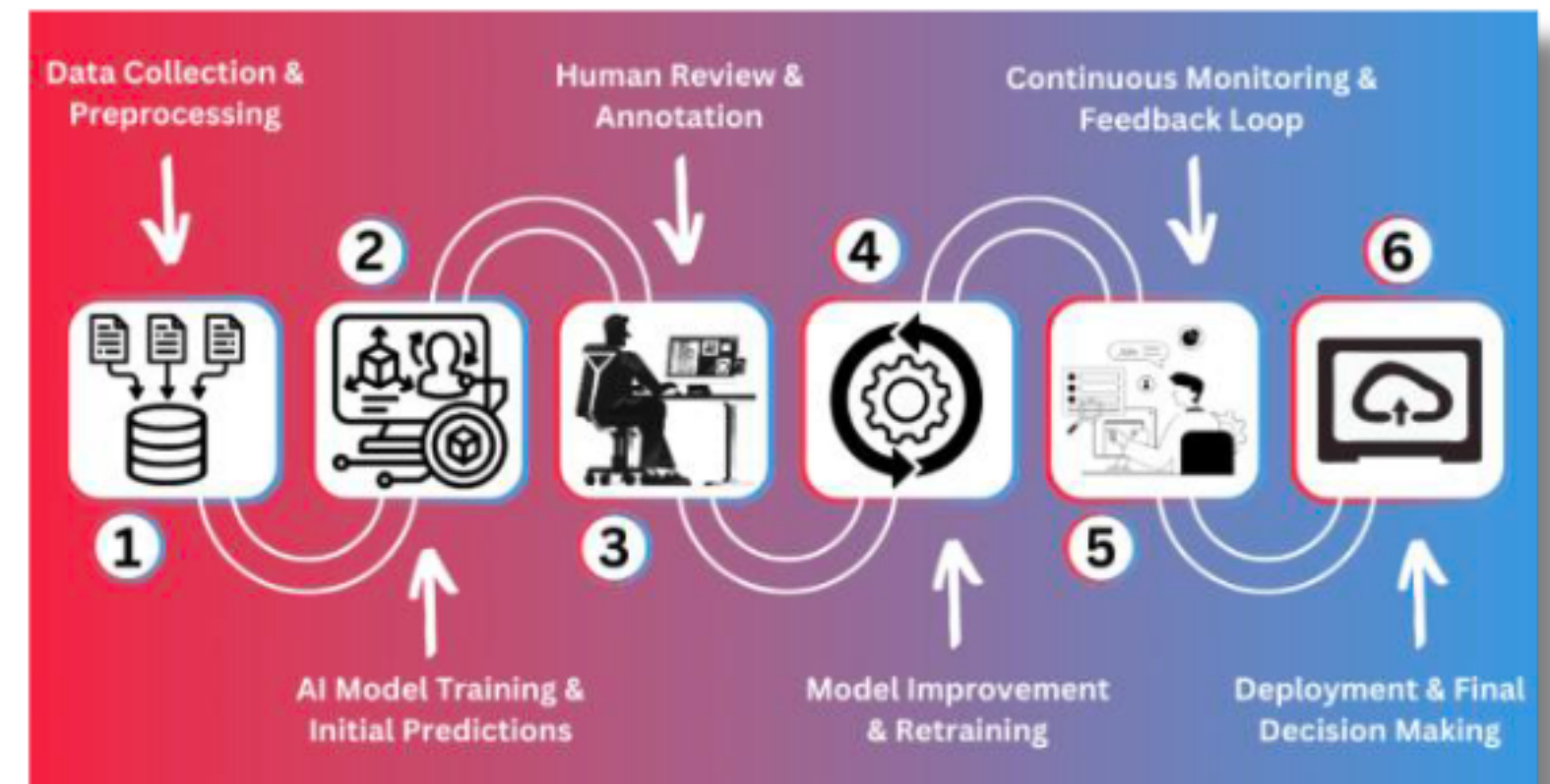
Validation

Human oversight is used to correct, build upon, and refine AI outputs



Manipulation

Humans provide nuanced commands via prompts to expand AI outputs.



“Artificial intelligence is not a substitute for human intelligence; it is a tool to amplify human creativity and ingenuity.”

Fei-Fei Li

Co-director of Stanford Institute for Human Centered AI

UX/UI to Maximize AI

Purpose-built

MACHINE

Upload document, parse, understand content



Retrieval Augmented Generation that looks at your whole library



Pulls references, generates highly tailored prompts, responses

HUMAN



Proposal Workflow

Proposals cannot be managed by prompts, a purpose-built workflow is required



Human in the loop design

AI generated content must be easily reviewable, explainable, and editable



Additional context

Humans know more than what's in your content library, allow them to use it to maximize AI output

Conclusion



What we've covered

- How AI and RAG (Retrieval Augmented Generation) cut drafting time while improving quality
- Best practices for prompting—context, tone, length, and explicit instructions
- Why human-in-the-loop oversight is essential to validate, refine, and guide AI outputs
- The limitations of generic LLMs vs. the need for purpose-built proposal workflows

Actions Items

- Start building a curated library of past proposals, project data, and bios for AI training.
- Develop structured prompting guides tailored for your team's proposal writing.
- Ensure human-in-the-loop review process to validate AI content before submission.
- Identify where workflows—not just prompts—need to be systematized for compliance.

Closing thoughts

Thank you!

We're incredibly grateful to everyone in the GovCon community—contractors, innovators, and changemakers—who continue to push this industry forward. Your insights, feedback, and dedication helped shape this report and drive meaningful conversations about the future of federal contracting. Thank you for being part of the GovBrew mission.

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