

# A Proposed Prompting Protocol to Get Substantive Enhancement of Genai Performance in An Organizational Context

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## Abstract

The paper introduces a structured prompting protocol designed to harness the full potential of generative AI (GenAI) products while mitigating their known limitations of misunderstanding and a lack of transparency in conversations. The protocol integrates principles from internal consistency models for knowledge in ancient Indian philosophy (“Mimamsa” or Exegesis) and Socratic questioning to encourage a collaborative, iterative dialogue between human users and GenAI, positioning the GenAI as an “online external consultant” and maintaining the human “in-the-loop” for oversight, contextualization, and critical evaluation. The efficacy of the protocol was empirically evaluated through two scenarios - in Scenario 1 three homeowners sought fire-mitigation strategies for three Southern California properties within a \$50 K budget, and in Scenario 2 a business analyst aimed for a knowledge-graph-based strategic model for a lubricant manufacturer. Compared to generic prompting, the Mimamsa-guided interactions in both the scenarios yielded more substantive, context-specific outputs that were validated by experts in the domains, and accelerated user learning of domain-relevant concepts. The findings demonstrate that the proposed Mimamsa protocol significantly enhances GenAI performance by structuring human-GenAI collaboration, ensuring transparency, and capturing mutual learning in actionable artifacts like knowledge graphs in a very short time. Consistent uses of the proposed Mimamsa protocol by each level of executives in an organization can, over time, build up the five key pre-requisites required to have a learning organization—personal mastery, mental models, shared vision, team learning, and systems thinking—transforming GenAI from a mere tool into a co-creative partner, fostering organizational learning and strategic advantage.

## Section 1 - Introduction

Several generative AI (GenAI) products are now available that have considerable amount of pre-trained knowledge complemented by Retrieval Augmented Generation (RAG) that dynamically searches data from external sources. Most of them are further enhanced by Reinforced Learning (RL) capability that enables such products to update their knowledge base and their inference capabilities by capturing the contents of its conversations with users. There are efforts underway to reduce the enormous computing resources needed for these products by techniques, such as distillation and Mixture of Experts. Consequently, many GenAI products are now available that have substantial potential for effective uses in businesses with improving efficiency as well reduced costs. GenAI products, however, are known to provide incorrect responses to prompts, and sometimes the response could be false or even made-up due

to several shortcomings. As a result, businesses face a dilemma of how to leverage the enormous potential these products provide while avoiding the shortcomings.

The present paper proposes a protocol that can enable leveraging the capabilities of GenAI while circumventing the current shortcomings to reach that objective. This proposed novel protocol is aimed at improving collaboration between a human interlocutor and GenAI as an individual online external consultant by combining the complementary capabilities of each. The paper also presents scenario-based evidence of how businesses can use the protocol for organizational development to become a learning organization as defined by Peter Senge (Ref 1). And the experience gained from that initial experience would subsequently help in deciding further uses such as for management decision making, use in specific business processes, etc.

### **Mimansa (or Mimamsa) – A Sanskrit word meaning inquiry, reflection, critical investigation.**

In Section 2 of this paper, we give a brief description of the current GenAI landscape. Section 3 gives the rationale for the proposed protocol that is given in Section 4. Section 5 describes the two scenarios for which we carried out conversations with GenAI (Char GPT 4 Plus) first by not using the protocol and second by using the proposed protocol. Findings from those conversations are given in Section 6 and our conclusions in Section 7. Finally, in Section 8 we discuss how, despite the challenges due to fast developments in GenAI domain, the use of the proposed protocols by executives at all levels will in time lead to a change of organizational culture toward a learning organization.

### **Section 2 - GenAI landscape**

Research and development in generative AI have been going on for quite some time, but that work has been turbo-charged in the last few years with many useful products being released, such as Gemini, Claude, Llama, Copilot, ChatGPT to name a few. These products, based on Large Language Model (LLM), have been pretrained on very large amounts of textual data. They have incorporated strong capabilities for natural language processing. Recently, these products have been augmented by Retrieval Augmented Generation (RAG) that combines pre-trained data with dynamically searching for data from external sources. This is further complemented by Reinforced Learning (RL) capability that enables such products to update their knowledge base and its inference capabilities by capturing the contents of its conversations with users.

Complementary sets of products have been developed with multimodal capabilities to accept from users not just text prompts but also images, audio recordings, and data in other formats such as Excel spreadsheets. Such products also aim to produce responses to queries/prompts from users as text and in other media if asked for by users.

Given the very large knowledge sets and billions of parameters to work with, use of all these generative AI products required enormous computing power and corresponding high cost of use. Efforts are ongoing to overcome the high costs in at least two ways. One is a distillation process that creates a smaller version of an LLM, perhaps targeted for niche uses. The distilled LLM generates predictions much faster and requires fewer computational resources than the full LLM. Another is using the Mixture of Experts (MoE), a machine learning technique, where multiple specialized models (experts) work together with a gating network selecting the best expert for each input. That too reduces the need for computational resources substantially.

In short, the landscape of Generative AI is full of products that have substantial potential for effective use in a business with improving efficiency as well as for reduced costs. Wilson and Daugherty (Ref 2) conclude that our professional success depends on our ability to elicit the best possible output from GenAI, and to learn and grow along with them. McKendrick (Ref 3) quotes industry leaders' predictions of AI creating new business models where the gap between big and small players closes entirely; that AI will create hyper-personalization in learning thus making the need to get an MBA obsolete, and hyper-personalized health care. Vinsel (Ref 4), however, alerts us to beware of all the hype by the producers of these GenAI products and by industry consultants. There are, in addition, some lingering issues that must be factored in as businesses try to figure out how to leverage the capabilities offered by GenAI products. GenAI products are known to provide incorrect responses to prompts, and sometimes the response could be false or even made-up. The causes are a combination of the following shortcomings. GenAI products:

- Do not fully understand the meaning of the prompt and do not seek confirmation of its interpretation.
- Have intrinsic limitations of pre-trained data, even with RAG capability, do not have contextual business-specific information and do not seek that information.
- Do not have critical thinking capability, although there have been recent improvements in its reasoning capabilities.
- Are like a black box since they do not provide information on how they arrived at the responses to the prompts, i.e., no transparency.

### Section 3 - Rationale for the proposed protocol

The proposed protocol has been developed to overcome those shortcomings so that the conversation with GenAI produces results that are substantive for the topic under discussion, and that the user can confidently trust and use.

It is important for the human interlocutor (user) to be in-the-loop so that he can provide appropriate oversight and control, especially in critical applications. He should be able to review, modify, and override the AI's decisions as necessary. He should be able to provide feedback to GenAI to improve GenAI's performance by allowing GenAI to correct any errors or misinterpretations.

The improvements would include detection and correction of errors by GenAI that the user detects, and what GenAI may detect in user prompts. GenAI can perpetuate and amplify biases present in the training data, and it is important for users to identify and mitigate these biases.

Users should be informed when an error occurs and provided with options for recourse. That way, there is testing and validation of inputs by users and of responses from GenAI at each stage of the conversation.

Conversation between a user and GenAI can also involve issues of ethics in using personal and business specific data, and also issues of fairness and non-discrimination in GenAI's responses. A formal protocol could detect such issues, if present, so that they could be resolved collaboratively by the user and GenAI.

It is important that an appropriate reasoning/logic technique is applied by GenAI to provide a correct response to users' prompt. The choice could be any of the commonly used techniques given below.

1. Deductive logic based on semantic analysis. Gen AI is very good at doing this without much human help.

2. Abductive reasoning i.e. educated guesses or hypothesis. This uses inductive logic requiring human creativity.
3. Heuristic reasoning which is experience based. This leads to rules of thumb and mental short cuts. This is best done collaboratively using knowledge graph concepts to get the best results.
4. Analogical reasoning by pattern recognition and drawing parallels. Gen AI is very good at doing this unaided.
5. Causal reasoning using Fishbone diagram concepts. Gen AI is very good at doing this unaided unless there is extensive use of mathematics where human inputs are required.
6. System-thinking that requires concepts of complex system dynamics, feedback loops etc. This is best done collaboratively.
7. Fuzzy logic using "fuzzy set theory" and approximate reasoning. This needs to be tested on an appropriate problem requiring this type of approach.
8. Probabilistic reasoning using probability theory and statistical analysis. Humans here must supply extensive data, and Gen AI can do the data analysis using conventional algorithms for analysis.

A formal protocol can enable collaborative effort by users and GenAI to select and apply the technique most appropriate for the problem being addressed.

Besides the formal protocol, there is also scope in interactive conversations for the human to deploy his/her creative skills. This has been described in the context of well-structured puzzles as the "Aha moment" (also called Eureka moment) when the solution becomes intuitively obvious. This can help converge on an appropriate solution rapidly. Gen AI can then easily apply deductive logical reasoning to convince itself that it is the correct solution to the problem at hand. Psychologists have found that humans having such Aha! moments experience bursts of high-frequency brain waves in their brain's right temporal lobe, just above the right ear. That part of the brain, the right anterior superior temporal gyrus, connects with many other brain regions. (The above observations on Human creativity are made to leave the scope for the user to extend the value of our Mimansa protocol further by recognizing and using such "Aha!" moments in the conversation with AI).

Finally, a formal protocol can force transparency and explainability in the conversation between the user and GenAI. It can make GenAI's reasoning clear to the user which can be crucial to generate trust. Techniques like attention visualization, feature importance analysis, and providing alternative explanations could be used. It is vital to communicate the limitations of GenAI because users need to know what GenAI is good at and where it might struggle or be prone to errors. This helps prevent over-reliance on the GenAI's output.

To achieve all the objectives mentioned above, the proposed protocol has been developed, as a more structured chain-of-thought prompting (Wei et al Ref 5), consisting of the following major steps.

1. Structuring the problem at hand and forcing semantic analysis of the prompts to permit logical analysis. This is a key role for the user. GenAI can be very useful for semantic analysis of the prompt due to its large language capabilities. The result would be a problem that is well restructured as needed to be amenable for logical analysis.
2. Choosing appropriate reasoning logic technique while incorporating business-specific contextual information. GenAI models can sift through multiple techniques and identify a technique that may provide an efficient and quick solution to the problem at hand. Users can verify the appropriateness of the technique by factoring in business-specific considerations and adjust the choice of technique by working collaboratively with GenAI.

3. Seeking an explanation of how GenAI finally arrived at its response. That transparency would allow users to validate the process and the results, and to ask for changes if needed. That would create users' trust in the final response produced by GenAI for the given problem.

#### Section 4 - Proposed (Mimansa) Collaborative Reasoning Protocol for Human-AI Collaboration

In human learning from a more experienced human teacher, the two time-tested techniques are:

- a) Didactic i.e. instruction based
- b) Socratic i.e. collaborative question based knowledge creation

It is proposed by us that when human users interact with GenAI, Socratic technique should be preferentially used. In the organizational context, the conversation is between the human executive and GenAI as an online consulting resource.

Philosophers in ancient India, with remarkable prescience had used certain tests for internal consistency of Knowledge developed through conversations between the teacher and taught. These principles were part of oral tradition and did not become part of a written code over the centuries. These are relevant even today in the context of AI aided reasoning.

Time-tested principles in ancient philosophical debates in the Mimansa tradition (Jayashree and Vishnupraba Ref 6) are summarized below:

The word Mimamsa itself is derived from the Sanskrit verbal root मृ् to know and its derivative (desiderative) root म्मिस् – the desire to know. Mimamsa means critical inquiry or closest English word is “exegesis”. In the proposed protocol for human-AI interaction, Socratic questioning of the teacher by the student and Mimamsa principle have been used. This proposed protocol can lead to effective GenAI-aided organizational learning. Along similar lines, Ref 7 describes how in classrooms studying legal texts, two students can pair up and have an interactive “think-pair” conversation that enhances mutual knowledge of the subject.

We have named our proposed AI prompting protocol in this paper as “Mimansa protocol”.

#### FORMAL STATEMENT OF THE PROPOSED PROTOCOL FOR HUMAN-AI INTERACTIVE CONVERSATIONS:

##### 1. Define the Purpose:

- Begin the interaction by explicitly stating the purpose of the conversation or the problem at hand.
- Ask for clarification on the purpose and adjust it if it is not clear. (This ensures both parties are aligned on the purpose of the conversation.)

##### 2. Specify Contextual Understanding:

- Provide relevant background information or context.
- Highlight any assumptions or known constraints.
- Ask to **testate** or summarize the context provided.
- Provide additional details or clarifications if there are ambiguities or gaps. (This ensures both parties are aligned on contextual information.)

##### 3. Set Goals:

- Define the desired outcome(s) of the interaction which could be a solution, a plan, or an analysis.
- Ask for confirmation of the goals and adjust it if needed. (This ensures both parties are aligned on what success looks like.)

**4. Specify Assumptions & Constraints:**

- Explicitly state any assumptions or constraints that are relevant to the problem.
- Ask to identify any other implicit assumptions or constraints.
- Verify these assumptions and constraints. (This ensures both parties agree on assumptions and constraints relevant to the problem.)

**5. Clarify and Answer Questions:**

- Ask if there are any questions or clarification needed for the purpose, context, reasoning method, goals, assumptions and constraints.
- Ask if there is ambiguity or multiple interpretations, and resolve them before proceeding. (This doubly ensure both parties are aligned to address the problem.)

**6. Iterative Problem-Solving:**

- Provide step-by-step input and ask for step-by-step results along with reasoning for those results.
  - A. Summarize the structure of the problem to be solved,
  - B. Ask to use the appropriate logical reasoning framework for problem solution,
  - C. Check the output and offer creative Insights to restructure the problem (Aha! moment),
  - D. Ask to attempt the solution once again in the light of the insights.
  - E. Check the output and seek alternative reasoning method as needed.
- Offer solutions, insights, or analyses iteratively until an acceptable final result is produced for the problem. (This iterative step ensures both parties are aligned on the final result.)
- Conclude the iterations if the marginal improvement from the previous iteration is too small or if the results are intuitively obvious – the “AHA” moment also called the Eureka moment.

**6A. Feedback Loop:**

- Provide feedback on AI's responses, indicating whether they align with your expectations or require adjustments. Adapt responses based on feedback. (This doubly ensures both parties are aligned on the final results.)

**7. Documentation & Summarization:**

- Request summaries of the conversation to maintain a clear record by highlighting key points, decisions made, and any unresolved issues. (This provides added support for the final results.)

**8. Conclusion & Next Steps:**

- Indicate when the interaction has reached a satisfactory conclusion or if further action is needed.
- Summarize the outcomes and suggest the next potential steps if applicable. (This confirms that the user is satisfied with the results.)

**9. Review & Reflection:**

- Reflect on the interaction and consider what worked well and what could be improved for future collaborations.
- Seek reflections on the interaction, noting any areas for improvement or suggesting refinements to the protocol. (This provides useful information for improvements in subsequent conversations.)

**Section 5 - Using the proposed protocol for two scenarios**

Dell'Acuas, et al (Ref 8) reported on the real-world use of GenAI by a team of commercial experts and technical experts at P&G for product development process to come up with product ideas, packaging, retail strategies, etc. They measured the outcome of the use in terms of solution quality (judged by experts) and time spent. They conducted their experiment four ways for the work to be done – by

individual only, by team only, by individual with the help of GenAI, and by team with the help of GenAI. Using individual only performance as a base, they observed that teams without GenAI and individual with GenAI performed to the same extent better than the base, and team with the help of GenAI was even better – for the solution quality and for speed of getting the work done. They also observed that expertise was shared such that the less experienced employees fared better with GenAI, i.e., they learned from using GenAI. Since individuals with the help of GenAI worked as well as a team, they concluded that GenAI was an effective teammate. They further concluded that GenAI is not just for routine tasks but also for critical thinking to solve complex problems, and GenAI is a teammate not just a tool.

Going one step further than the results mentioned above, our postulates are that the performance/outcome of individual plus GenAI will be even better with the use of the proposed protocol, and in the process, GenAI will learn about contextual information and the individual will learn from GenAI about the topic being discussed. To seek evidence that would support our postulates, we carried out conversations with GenAI (Chat GPT 4 Plus) for two scenarios. In scenario 1, we were homeowners of properties in the Los Angeles area, that was ravaged by wildfire recently, looking for effective ways to reduce the risk of fire damage to the properties within a budget of \$50K for each property. In scenario 2, we were a business analyst seeking effective ways (a knowledge graph in particular) to give strategic advice for evolving a business model for the company going forward to the CEO of a medium sized lubricant manufacturing company with a turnover of \$200M. We carried out these conversations two ways. The first was stating the entire problem in 1-2 prompts and the second was by using all the steps of the proposed protocol. We then compared the results of the two conversations for each scenario to look for improvements in the outcome and in the extent of learning.

### **Scenario 1**

We represented three friends who live in Southern California communities that were impacted by the recent wildfires. The one in Thousand Oaks escaped unscathed. The second is Bell Canyon, where some houses caught fire. Our friend was asked to evacuate as a precautionary measure. The third is in Altadena, where the houses are older, i.e. 1960's vintage, several houses were totally gutted by the spreading Eaton Fire, although our friend there was lucky. It will take quite some time for the fire department to collate all the data and analyze it statistically, and for this to reflect in the building codes. In the meanwhile, our friends are trying to reason out what they can do as homeowners within a budget of \$50000 each to improve the fire safety of their homes. From their experiences during the fire, it could include measures like concrete roof, fireproof double windows, water curtains, fire resistant paints and many more. The houses in Southern California are mostly made of wood as a material of construction due to its low initial cost and easy availability. However, in the older building codes, steel shims were not mandated. We are not experts in the technology of fire hazard analysis, and we needed advice in simple English on what we should do within the \$50000 budget to safeguard our homes against future wildfires. It also needs to be understandable to the respective insurance companies as they have started becoming difficult on home insurance renewal after the Eaton fire particularly.

#### ***Scenario 1 without the protocol***

In the first way, we straight away asked GenAI to develop a plan to reduce fire risks for these properties without using the protocol. GenAI prepared one plan of upgrades meant for all three properties, given in

Table 1. It specified its assumption of a typical 2,000 square-foot Southern California home that needs to address several key vulnerabilities. It also noted that the prices were approximate and can vary by region and contractor.

Our friends were aware of some possible steps, such as concrete roof, fireproof double windows, water curtains, and fire resistant paints. In the conversation with GenAI even without the use of the proposed protocol, they learned about additional actions such as vent replacement, windows upgrades, deck upgrades, landscaping, structural upgrades. However, a large amount was allocated for unspecified measures such as additional safety measures and miscellaneous, and the plan did not consider the different contexts of the three properties.

### *Scenario 1 with the protocol*

In the second way, using the proposed protocol, we provided the year of construction of each property. Then we probed GenAI about multiple factors.

- About how home insurance companies graded scales to assess a home's fire safety level,
- About findings in reports and studies by the Los Angeles Fire Department that detail post-fire inspections of homes affected by the recent wildfires that may be helpful,
- About the dimensions of fire risk (GenAI mentioned ember attack, radiant heat, fuel availability and structural vulnerability),
- About fire-proof materials that are found in recent industry discussions and code updates for new residential constructions in Southern California (it came up with four such materials),
- About measures that address each of those dimensions,
- About the reasoning method it used to arrive at the budget allocation (it used a heuristic, multi-criteria optimization process based on cost–benefit and risk-priority assessments).

Given all the exchange of information and probing, GenAI came up with action plans customized for each of the three properties, that we tabulated as given in Table 1.

**Table 1 – Improvement plans proposed by GenAI for Scenario 1**  
(With and without using the proposed protocol)

Items in the improvement plans	Using the protocol			Not using protocol
	Thousand Oaks	Bell Canyon	Altdena	For all three sites
Defensible Space & Vegetation Management	\$5,000	\$7,000	\$8,000	
Ember Protection Enhancements	\$3,000	\$3,000	\$5,000	
Structural Retrofitting with Fireproof Boards			\$15,000	
Exterior Surface Treatments	\$7,000	\$12,000		
Window Upgrades	\$10,000	\$8,000	\$7,000	\$6,040
Roof & Structural Upgrades	\$5,000			
Active Water Curtain System	\$10,000	\$10,000	\$8,000	
Ember-Resistant Vent replacement				\$750
Metal Gutter Guards				\$900
Exterior Fire-Resistant coating/paint				\$3,000
Deck Upgrades				\$2,500
Landscaping/Defensible space				\$5,000
Structural Upgrades				\$7,000
Roof maintenance and ember resistant underlayment				\$4,000
Additional Fire-Safety measures				\$3,000

Contingency/Documentation	\$10,000			
Minor Structural Reinforcements & Contingency		\$10,000		
Contingency/Professional Services			\$7,000	
Contingency, Permits and miscellaneous				\$17,810
Total investment	\$50,000	\$50,000	\$50,000	\$50,000
Risk assesment				
Before improvement	Low	Medium	High	
After improvements	Low	Low	Medium	

As a follow up, we asked GenAI to determine risk ratings for the three properties before and after the action plans are implemented. Its responses are also given in Table 1. GenAI determined the risk rating for the Thousand Oaks property as low before any improvements and indicated that the improvements would further reduce fire vulnerability. For Bell Canyon property, it determined the fire risk to be medium before the improvements and low after the improvements. And for the Altadena property, it rated fire risk as high before the improvements and only medium afterwards.

We then asked GenAI about why the Altadena property risk rating was medium even after the proposed improvements. GenAI responded that that property will have high structural vulnerability even after the proposed improvements. When asked to suggest further improvements to that property to bring the risk level to low, GenAI came up with four further actions, namely comprehensive structural retrofit, enhanced roof replacement, integrated active suppression systems, and additional fireproof cladding and coatings, for an additional cost of about \$15K to \$20K.

These results with using the proposed protocol were obtained over two conversations that overall took only about 60 minutes that included the time taken by us to think and enter the prompts and the time take by GenAI to respond. GenAI was able to devise improvement plans customized to each property. An experienced civil engineer found those customized improvement plans for each property to be appropriate to reduce the fire risk for these properties. That clearly shows the effectiveness of the proposed protocol, compared to without it, in coming up with a quality result for the problem of mitigating fire risks for a property given its location and year of construction.

In addition, within only about 30 minutes of conversations with GenAI, we learned many aspects of fire hazards (e.g., dimensions of the risk, grading scale used by home insurance companies) and multiple ways to mitigate those risks (e.g., fire-proof materials, different parts of the house that need to be attended to other than the obvious roof and use of wood in the structure). Trying to gain that knowledge through other means, even with sophisticated searches, would have taken much longer and we would not have known what to look for or phrased the searches appropriately. In short, the results of this scenario support our postulates that the proposed protocol is effective is getting useful substantive results from GenAI, and that we learned new knowledge quickly using GenAI as an individual online external consultant.

## Scenario 2

We represented Vidya the Business analyst working for the CEO of a Medium sized Lubricant manufacturing company with a turnover of USD 200 million. She had been tasked with evolving a business model, e.g., a knowledge graph, for the company going forward using her domain knowledge and skills in knowledge management. She was also interested in understanding any theoretical

frameworks that may be appropriate for her work in diverse dimensions such as technology, finance, CRM, psychology and sociology that are pertinent to managing real world business.

### *Scenario 2 without the protocol*

As was done in scenario 1, in the first approach, we very briefly described the business and straight away, without using the proposed protocol, wrote about her objective of the conversation with GenAI to get a knowledge graph for the company going forward in analyzing an appropriate business model based on GenAI's choice of reasoning method(s). GenAI asked for some clarifications and that were given as follows.

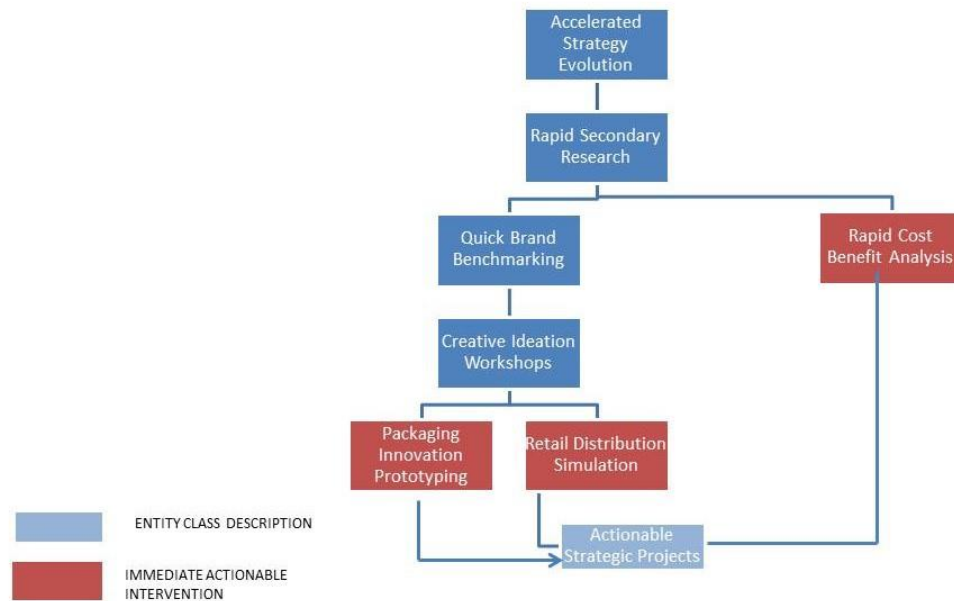
1. Purpose of the knowledge graph is to provide Strategic advice to the CEO of the company.
2. Key stakeholders are internal executives of the company at tactical and operative levels (not for external stakeholders).
3. Use only external data from the Internet.
4. The plan is to develop a strategy to gain commercial advantage over the company's competitors in the Lubricant business.
5. No constraints on technology adoption if there is favorable cost-benefit analysis.

GenAI responded that it will likely use abductive reasoning (to hypothesize viable models based on available industry patterns), analogical reasoning (comparing similar implementations in other industries), and probabilistic reasoning (to assess the likelihood of success for different approaches based on published data). It further stated that the most suitable business model for her knowledge graph would likely fall under "Data-Driven Competitive Intelligence" or "AI-Augmented Strategic Advisory". Accordingly, it was about an approach to create a knowledge graph consisting of defining objectives and scope, data integration, technology selection, cost-benefit analysis, incremental development and continuous improvement.

When given further creative insight that "successful automotive lubricant business such as engine oil requires the creation of a strong differentiated product brand sold in small packs e.g. 5 litres, in the retail distribution chain", GenAI modified the knowledge graph creation to include consideration of external data and market trends, competitive intelligence, brand differentiation, packaging innovations, retail distribution strategy, commercial advantages, cost benefit analysis and technology adoption.

We pointed out that although the knowledge graph could meet the objectives, it would take several months on data collection projects on market trends, competitive intelligence on existing product brands and interviews with industry leaders. In view of this constraint, we asked GenAI to produce a knowledge graph that accelerates the strategy evolution process and comes up with workable creative projects on brand differentiation, packaging innovation and retail distribution strategy. In just a few seconds, GenAI came up with a revised knowledge graph to include consideration of rapid secondary search, quick brand benchmarking, creative ideation workshops, packaging innovation prototyping, retail distribution simulation, rapid cost benefit analysis, and actionable strategic projects. That knowledge graph, formatted for better readability, that is given in Figure 1.

**Fig. 1. Scenario 2 knowledge graph created without using the protocol**



## *Scenario 2 with the protocol*

As in approach 1, we wrote about Vidya's objective of the conversation with GenAI to get a knowledge graph for the company going forward in analyzing an appropriate business model. We then provided contextual information that the company is aspiring to change the company's working culture for continuous organizational learning and creativity improvement which is not emphasized at present. Given that context, GenAI listed theoretical frameworks and practical approaches that may be appropriate to consider, namely organizational learning, knowledge management, creativity and innovations, cultural change and psychological safety. GenAI recommended practical steps to meet that goal, such as leadership development, knowledge management system, incremental and radical innovation, and employee engagement.

We then provided further contextual information about an effort already implemented in the company to make GenAI available to senior managers. We then asked GenAI if deductive logic would be sufficient for reasoning through knowledge gathered by those senior managers, say for a specific case of creating a knowledge map for automotive lubricants which accounts for over 80% of current business of the company. After thinking about it for some time, GenAI responded that deductive logic is great for applying established principles, but in practice we will also need to apply inductive reasoning, abductive reasoning and perhaps modal logic too.

We gave an example to focus further conversation stating that successful automotive lubricant business, such as engine oil, requires the creation of a strong differentiated product brand sold in small packs, e.g. 5 litres, in the retail distribution chain. That triggered the response from GenAI that in markets like automotive lubricants, especially engine oil which constitutes a large portion of the business, differentiation is crucial. Packaging in small, convenient sizes (like 5-litre packs) can enhance brand visibility and align with retail distribution practices, making it easier for consumers to purchase and use the product. That such an approach can create a unique brand identity that stands out in a commoditized market, where performance specifications are often very similar across brands. GenAI further added that, from a logical standpoint, while deductive logic will help apply established principles (e.g.,

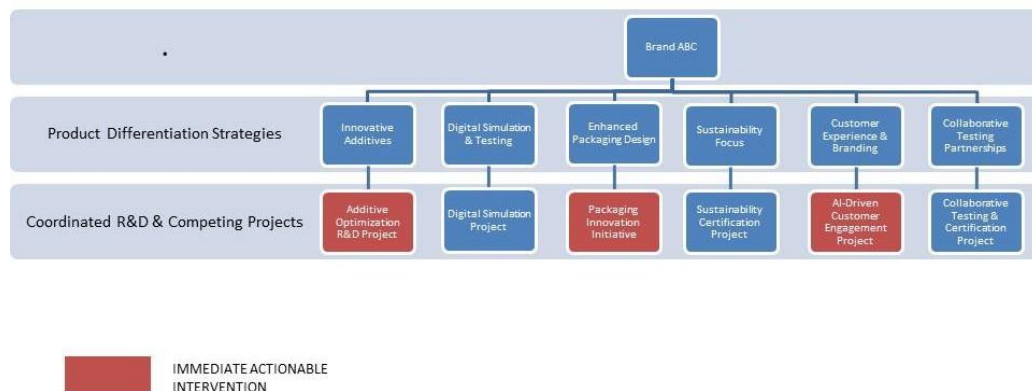
consumer convenience and retail preferences in packaging), combining it with inductive reasoning (drawing insights from market trends and consumer feedback) would be more robust. This multi-logical approach will ensure that we not only apply known frameworks but also adapt based on emerging data and context-specific insights.

Having agreed with GenAI for appropriate reasoning/logical approach for the objective at hand, we asked GenAI for a list of data items needed for the market research required for the analysis, and it provided a useful list consisting of consumer demographics and behavior, packaging preferences, market size and growth trends, competitive landscape, retail and distribution channels, price sensitivity and value proposition, brand perception and differentiation, trends and innovations in packaging, supply chain and cost structure. When we asked for qualitative data that may be useful, GenAI identified emotional motivators, brand attachment, perception and associations, and influence of marketing and messaging.

Zeroing further into constraints in our industry, namely product specifications are governed by the generally accepted API classifications e.g., CD, CF, CF-4, CG-4, CI-4, CK-4 etc. which makes it difficult for a company to have a real differentiator in the formulation without incurring heavy costs on engine testing. We asked GenAI how to break out of this limitation/constraint. GenAI identified several approaches to differentiate our product without solely relying on costly engine tests, such as leveraging digital simulation and modeling, innovative additive packages, focusing on packaging and customer experience, collaborative testing and certifications, and sustainability and regulatory compliance.

The results with using the proposed protocol were obtained over four lengthy conversations that that one of the authors had with Chat GPT Plus, these took only a total of about 30 minutes each with “Machine reasoning time” of 20-30 seconds. Given this rich exchange of information, we finally asked GenAI for a specific diagram on strategies for product differentiation with reference to our automotive engine-oil brand ABC, and related projects which must be coordinated between the company’s R&D department and marketing department. GenAI came up with the knowledge graph, formatted for better readability, that is given in Figure 2.

**Fig. 2. Knowledge graph created using the protocol for scenario 2**



One of the authors of the present paper has had considerable domain knowledge of the lubricant industry and the related chemical additive industry. He has opined that most working executives in the industry are able to pick up the first level insight that successful brands can be built by following the time tested

retail distributorship model used in Fast Moving Consumer Goods (FMCG) companies. The conversation where the proposed protocol was not used produced only such a generic type of knowledge graph which would be used by the company's competitors as well. However, in the conversation where the business analyst used the proposed protocol, what finally emerged was a knowledge graph wherein the critical role of additive chemistry and product formulation was identified. The change of business strategy that will be proposed to the CEO will be for considerable resource allocation to R&D of product formulation and performance testing. This will enable the company to create new differentiated products that will take away market share from the competition.

### Section 6 - Findings:

In both the scenarios, the use of the proposed Mimansa protocol clearly produced more substantive and specific responses to the problems being discussed. GenAI had all that knowledge, but the protocol guided and coaxed it out of GenAI. In scenario 1, the use of the protocol produced improvement plans that were customized for each property for the best use of the available funds, not just a generic one. GenAI was also able to provide additions to the improvement plan for one of the properties to bring its risk level down to low. The quality of the results met with the approval of an experienced civil engineer. Similarly, in scenario 2, the use of the proposed protocol elicited a more direct and detailed result from GenAI to assist in the launch of new product, compared to a more generic result without the use of the protocol. That too met with the approval of an expert experienced in the lubricant business. That supports our first postulate that using the proposed protocol enables getting the most relevant substantive knowledge that GenAI already has.

In addition, in both the scenarios, use of the proposed protocol resulted in knowledge that a less experienced person may not have. In scenario 1, GenAI provided information on the dimensions of wildfire risk, grading scales used by home insurance companies, different fire-proof materials, different parts of the house that need to be attended to other than the obvious roof and use of wood in the structure that normal homeowner is unlikely to have. It was a quick way to learn new things about wildfires. Similarly, in scenario 2, GenAI provided information on several approaches to differentiate a new lubricant product without solely relying on costly engine tests, such as leveraging digital simulation and modeling, innovative additive packages, focusing on packaging and customer experience, collaborative testing and certifications, and sustainability and regulatory compliance, as well as quantitative and qualitative data that is invaluable. That supports our second postulate that using the protocol in conversing with GenAI enables learning new knowledge effectively and very quickly.

The knowledge and reasoning method used by Gen AI on its own can be useful, but the human interlocutor using the protocol should guide the conversation to other reasoning methods that will lead to better knowledge to solve the problem at hand. We also found that mutual learning can be captured as a knowledge graph. GenAI can be asked to produce a DOT script (with no Syntax errors) which can be used on an app like Mermaid Live editor to generate the knowledge graphs shown above for scenario 2. (Figures 1 and 2) These graphs capture the learning that has happened in the conversation and can be presented to top management to aid strategic decision making in organizations.

### Section 7 - Conclusions

The results from the two scenarios presented above clearly show the effectiveness of the proposed Mimansa protocol to get substantive performance from GenAI. The results from conversations with

GenAI without the proposed were okay but a lot less substantive and useful. In scenario 1, getting a generic improvement plan for each of the three properties was okay but the customized plan separately for each property was definitely better. The same can be concluded from the results in scenario 2.

In both the scenarios, we had to provide contextual information to GenAI that it learned and used in later parts of the conversations. At the same time, we too learned a lot. For example, in scenario 1, we learned about wildfire risks, risk mitigation materials, and other strategies for mitigating wildfire risks to property. In scenario 2, instead of staying with the time tested retail distributorship model for lubricants, we learned about the critical role of additive chemistry and product formulation in retail distribution.

The knowledge gained at an advanced stage of a conversation with Gen AI can be captured in a knowledge graph, and GenAI can produce such a knowledge graph. Guided by this knowledge graph, GenAI could be tasked with producing useful output pertinent to the problem at hand. This would be similar to what Juyal (Ref 9) has stated that the synergy in GenAI and knowledge graph combination will enable context-aware querying, multi-step reasoning, real-time decision making and explainable outcomes. Production of such knowledge graphs can be very helpful for an organization to become a learning organization. It will leverage semantic reasoning and pattern recognition capabilities of GenAI and actionable interventions by the user to understand cause-effect relationships among "entities" in a knowledge graph, e.g. concepts, things(objects), people, locations, events, etc. By GenAI and user jointly analyzing potential consequences of different actions, the best interventions for problem resolution can be pinpointed. For example, we engaged GenAI in a conversation to get a better handle on complex systems, such as climate change, and the productive outcome was used by GenAI to draw a knowledge graph, formatted for better readability given in Appendix I. Such knowledge graphs can help in solving complex problems and would also enable enhanced communication and alignment among various stakeholders on policies/strategies in an organization.

## Section 8 - Discussion

The focus of our earlier paper, Ravimohan and Sahasrabudhe (Ref 10), was on organizational decision making, preferably through cross-functional teams. In the present paper, with the advances in GenAI technology, it was our endeavor to work out a practical way in which each executive at any level in the organization can engage with GenAI in his day to day work. This should lead to freeing up his time for creative learning activity in collaboration with GenAI specific to his job deliverables. The use of the proposed protocols by executives at the top level, middle level and operative levels will in time lead to a change of organizational culture toward a learning organization. (Appendix II gives examples of management decisions at different management levels that could be helped by using GenAI.)

What we foresee as the new working paradigm in GenAI aided learning organizations can be illustrated by the following image (also created by GenAI). This image tries to show the human at a computer keyboard and Gen AI as a co-worker behind the computer to create enhanced reasoning capability.



Of course, there will be challenges such as:

- Rapid pace of development: The field of GenAI is evolving so quickly that it is difficult to keep protocols and guidelines up to date.
- Context-specific considerations: The best approach to human-GenAI interactions will vary depending on the specific application and context.
- Balancing automation and human control: Finding the right balance between automation and human control.
- Company confidential information: Retaining privacy of company specific contextual information that may be introduced in the conversations with GenAI.

Nevertheless, organizations should not look at GenAI as a cost but rather as an investment to make the company profitably grow in a competitive market. The way forward would be for organizations to get experience in using GenAI by adopting the Mimansa protocol to obtain substantive performance from GenAI and to become a learning organization that subsequently would lead to considerable payoffs.

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