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GenAI Agent Architectures for Enhanced Educational Workflows

Ir Prof Alan Lam, JP

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Principles of GenAI Agent Design

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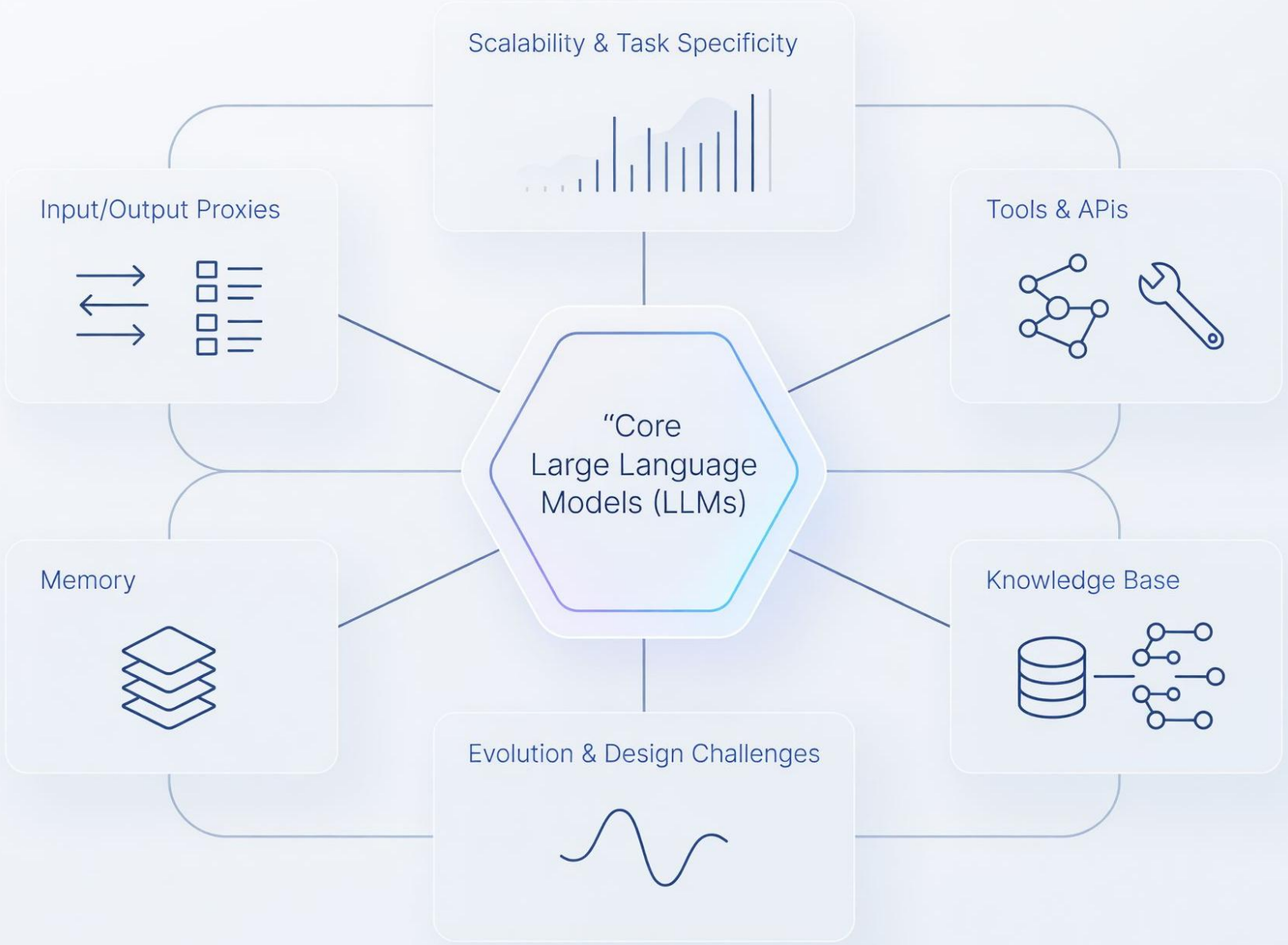
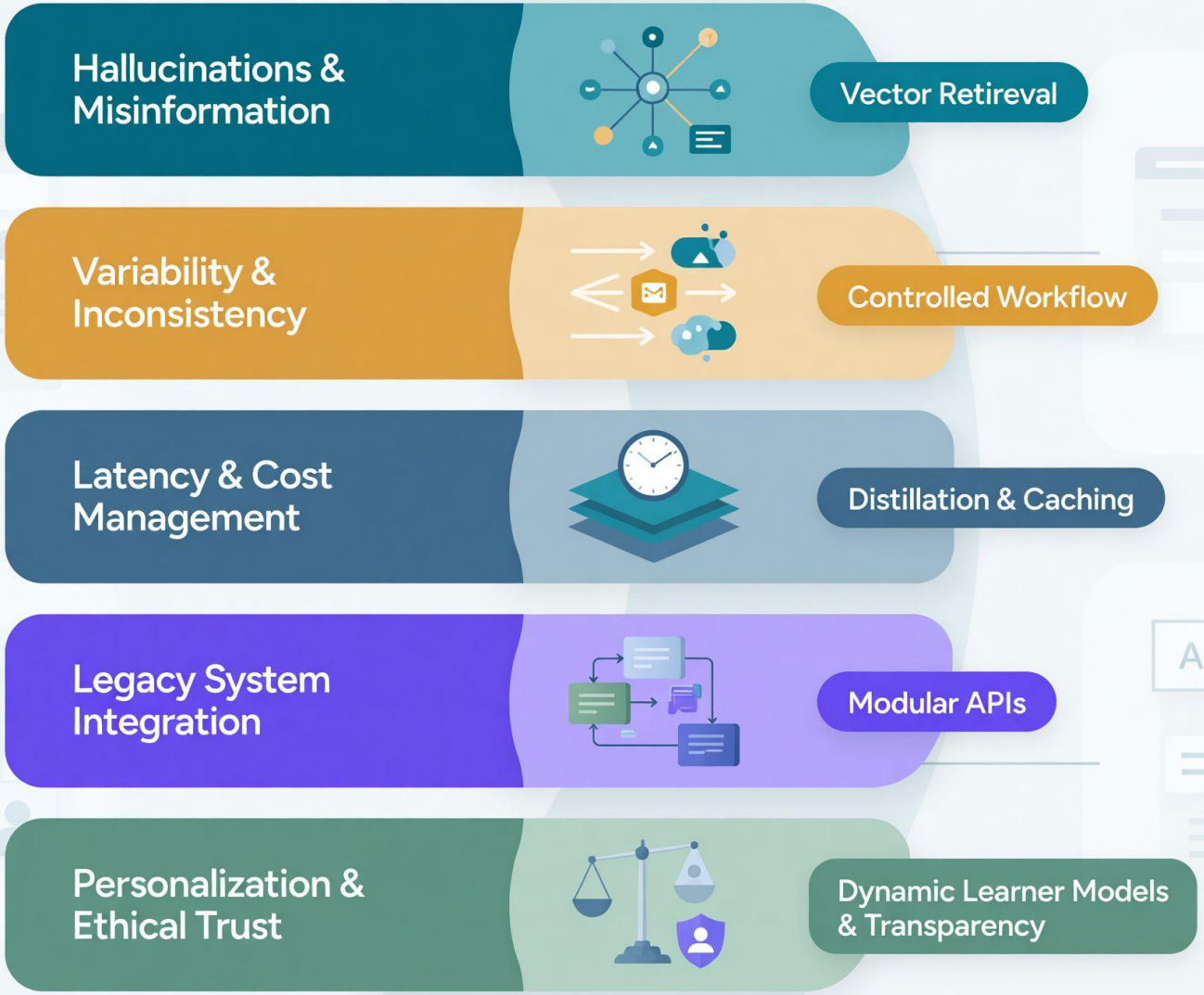
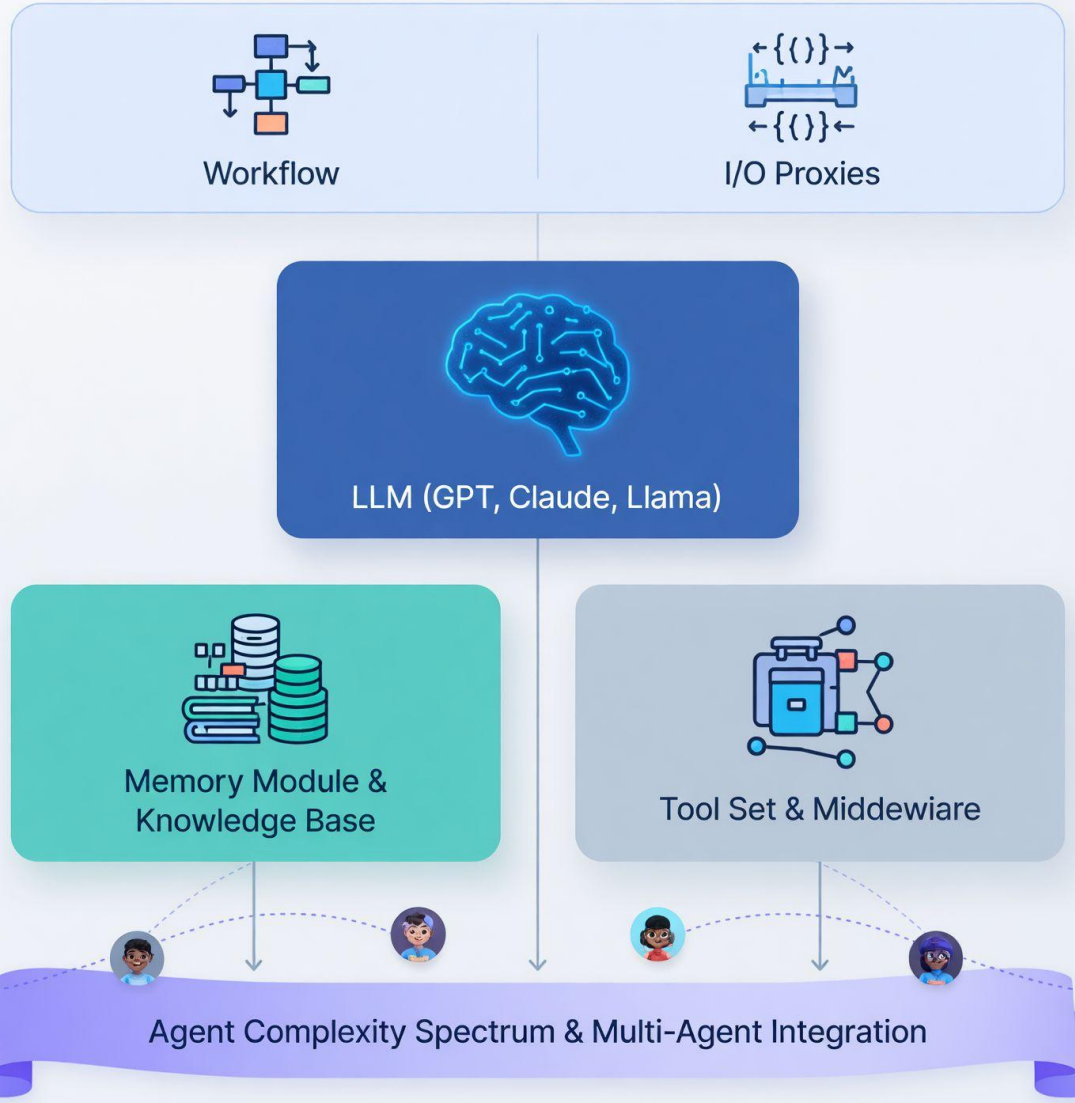
Fundamental Concepts of GenAI Agents



Challenges and Solutions in Agent Design



Agent Architecture and Components

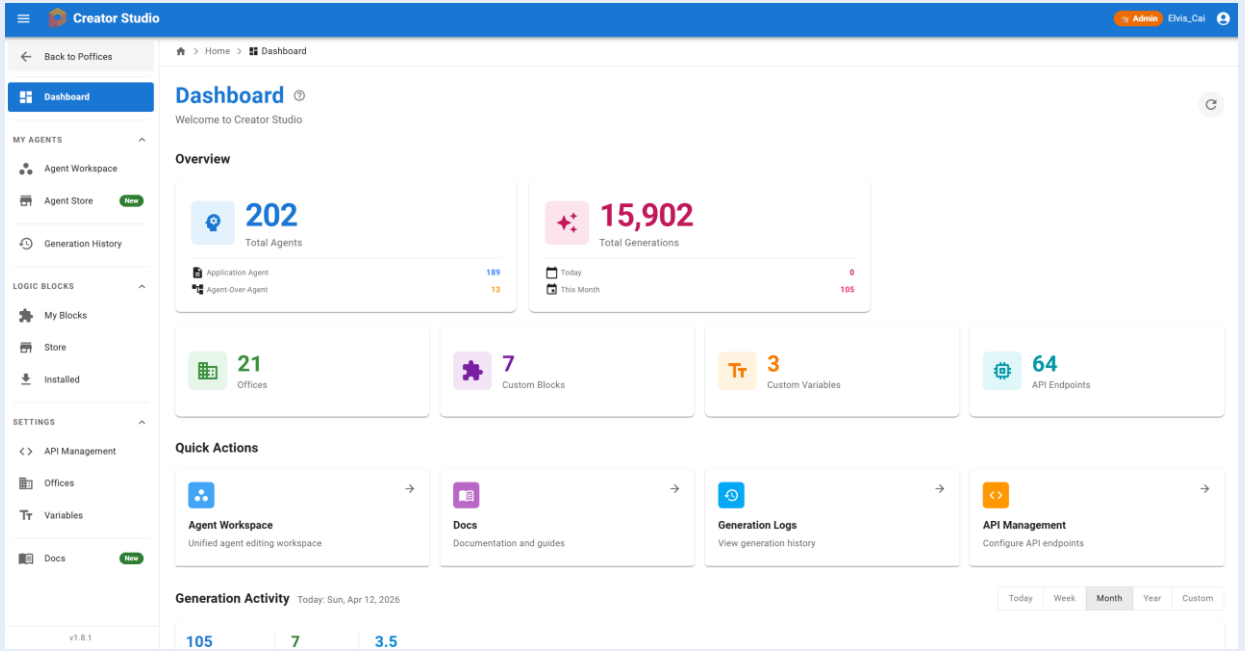


Future Trends in GenAI Agent Design

Review Agent's Results in Creator Studio

- When Poffices Agent execute one task, Creator Studio will record the data of all steps in each milestone.
- The execution steps include:
  - Each block's input/output
  - Variable replacements that occurred
  - LLM calls and responses
  - Logic branch decisions (which path was taken)
  - Loop iterations
  - Errors and skipped blocks

Dashboard of Creator Studio to show the overview of the Poffices Platform



Why check? → Debugging, quality assurance, understanding agent behaviour

Generation History Record

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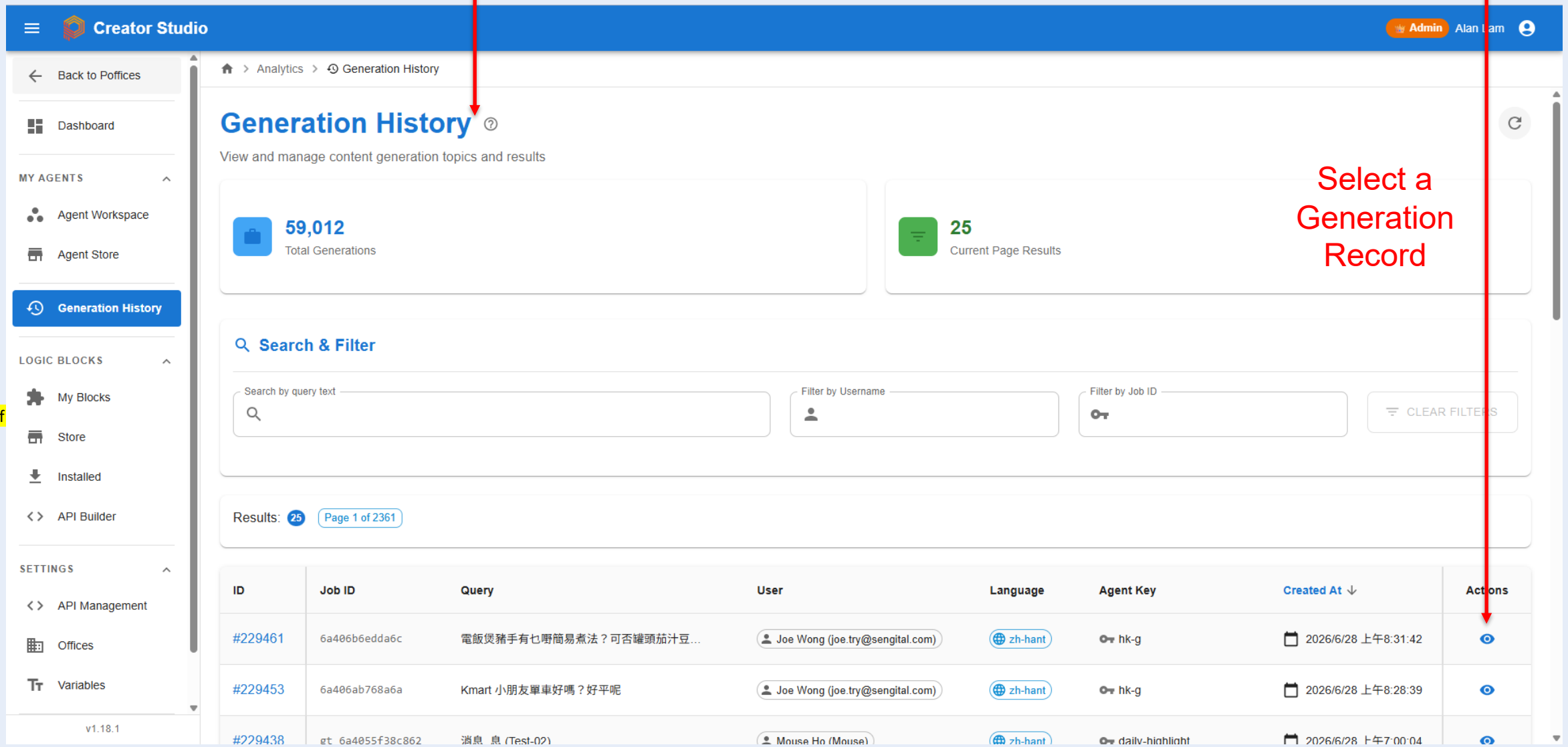
Dashboard of the Generation History

In the Variables page, there are many prompt variables including system variables and different domain specific prompt variables based on different Prompting techniques such as role, instruction, step, example and other advanced prompting variables.



Select a Generation Record

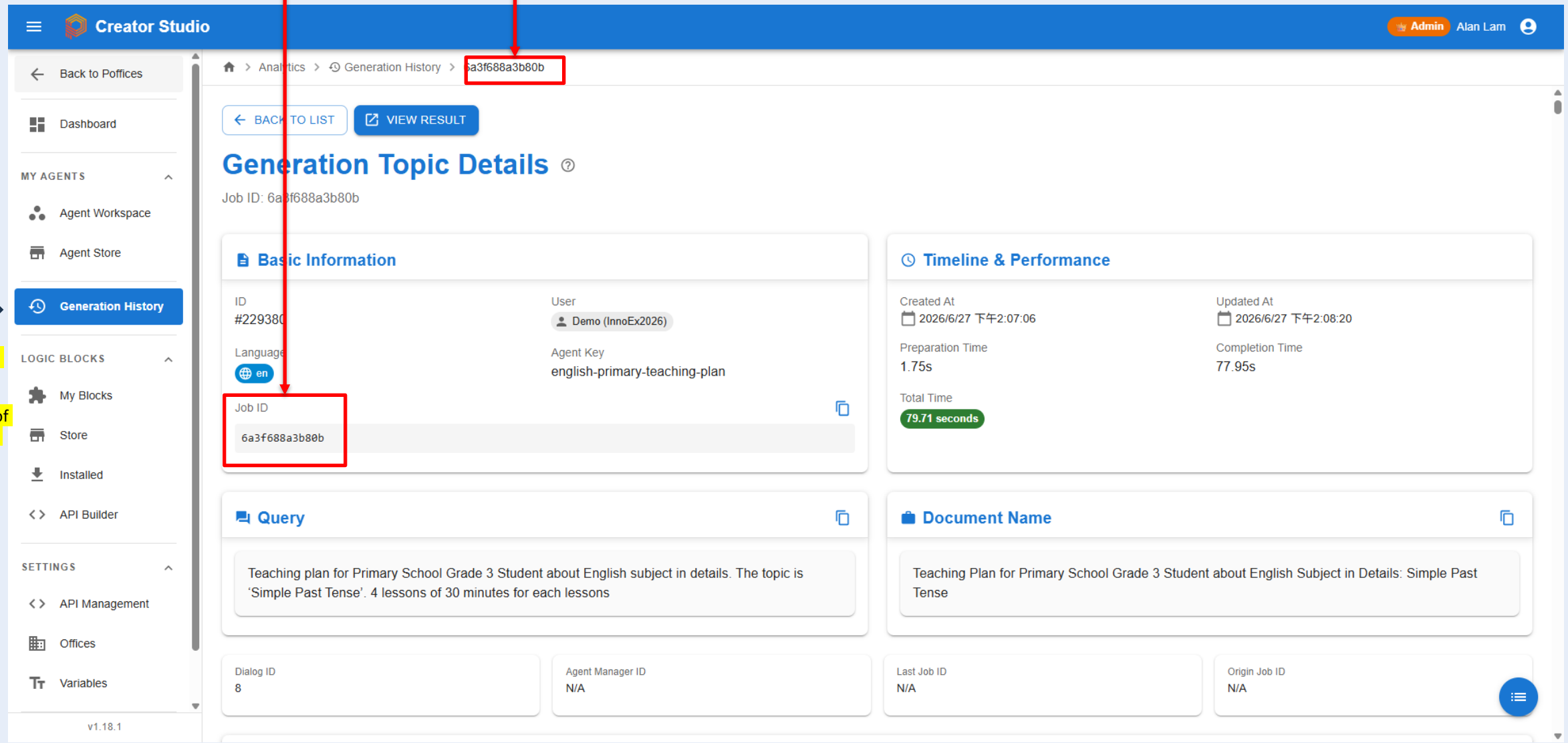
Generation History to show the details logs of generation content

Generation History Record

JOB-ID

URL: add /creator-studio/content-generation/{JOB-ID}

Eg. https://{LOGIN-URL}/creator-studio/content-generation/{JOB-ID}



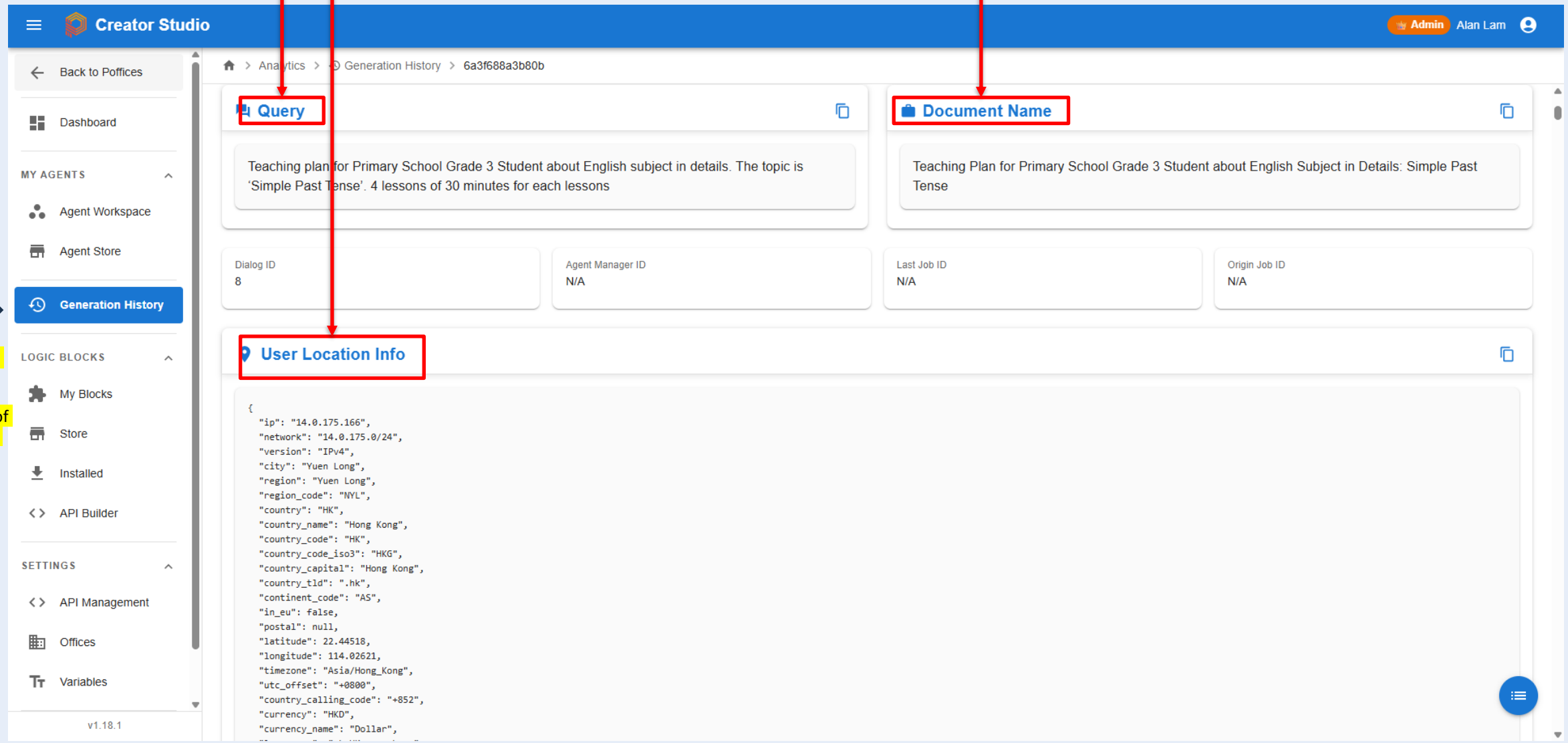
Generation History to show the details logs of generation content

Generation History Record

User Query input by user

User Location, Date and Time info

Document Name generated by the input layer of the agent



Generation History to show the details logs of generation content

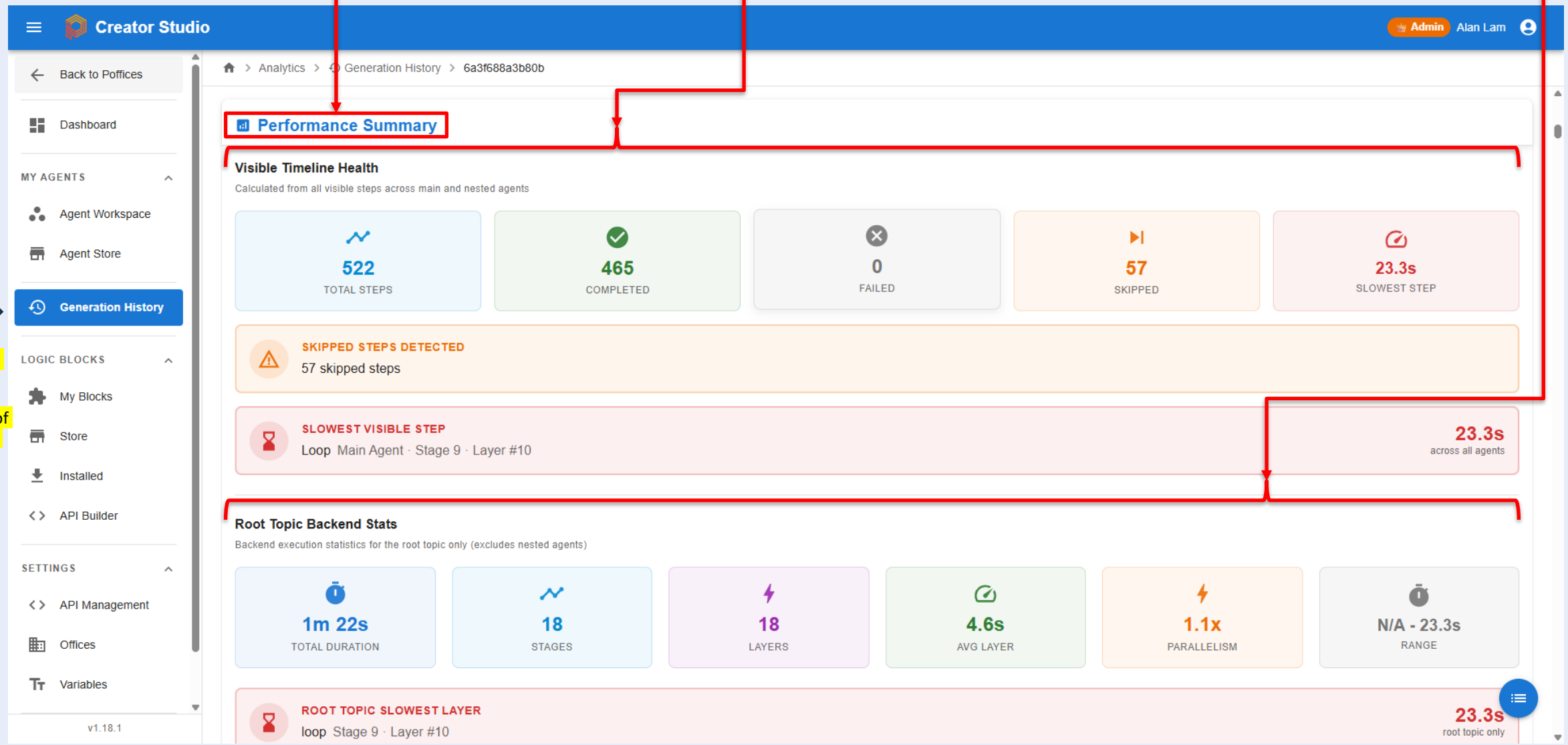
Generation History Record

Performance Summary

Visible Timeline Health Check

Summary of the Backend Statistics

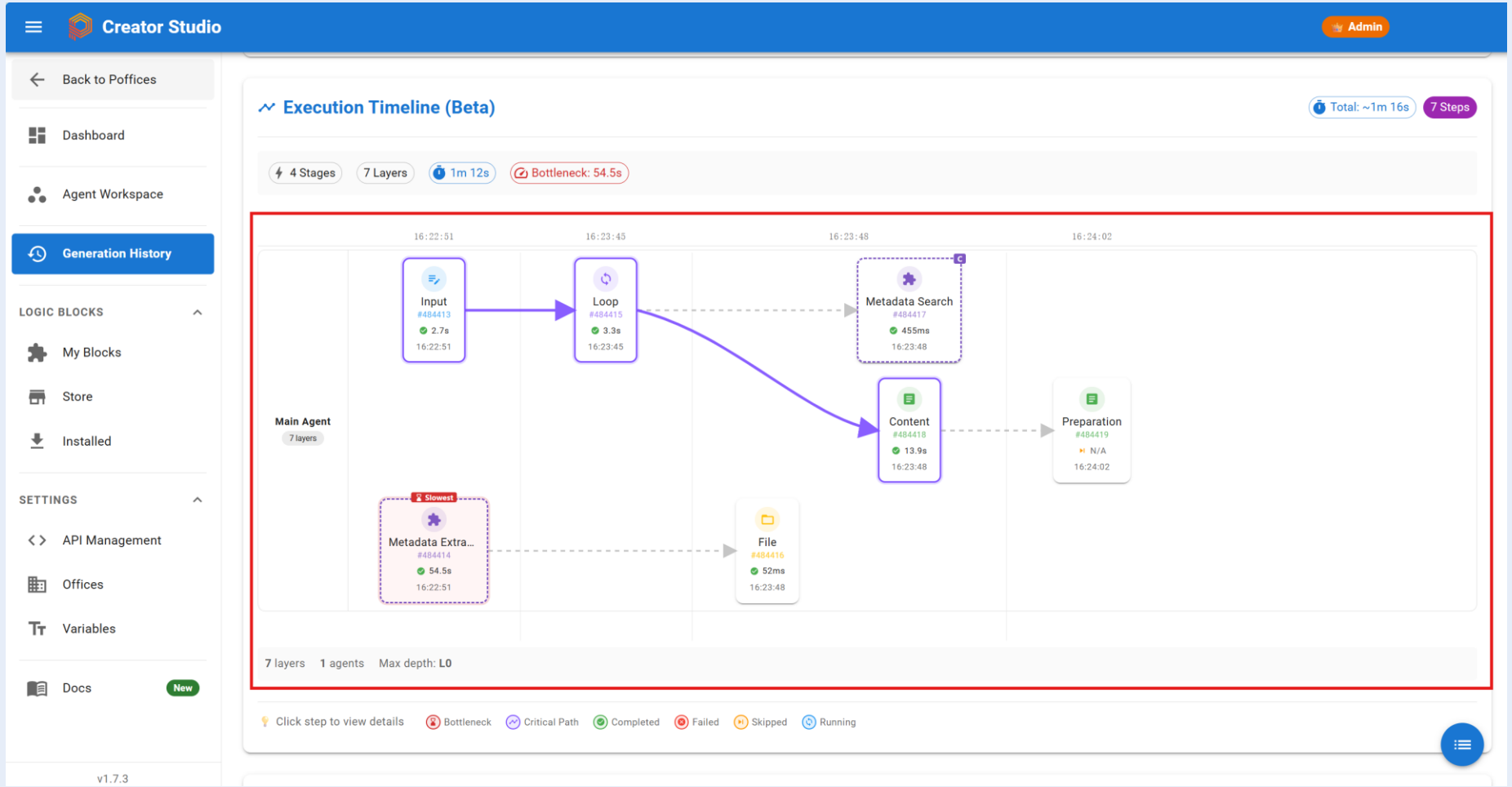
Generation History to show the details logs of generation content



Generation History Record

➢ Understanding the Timeline View

The Timeline shows block-by-block execution:



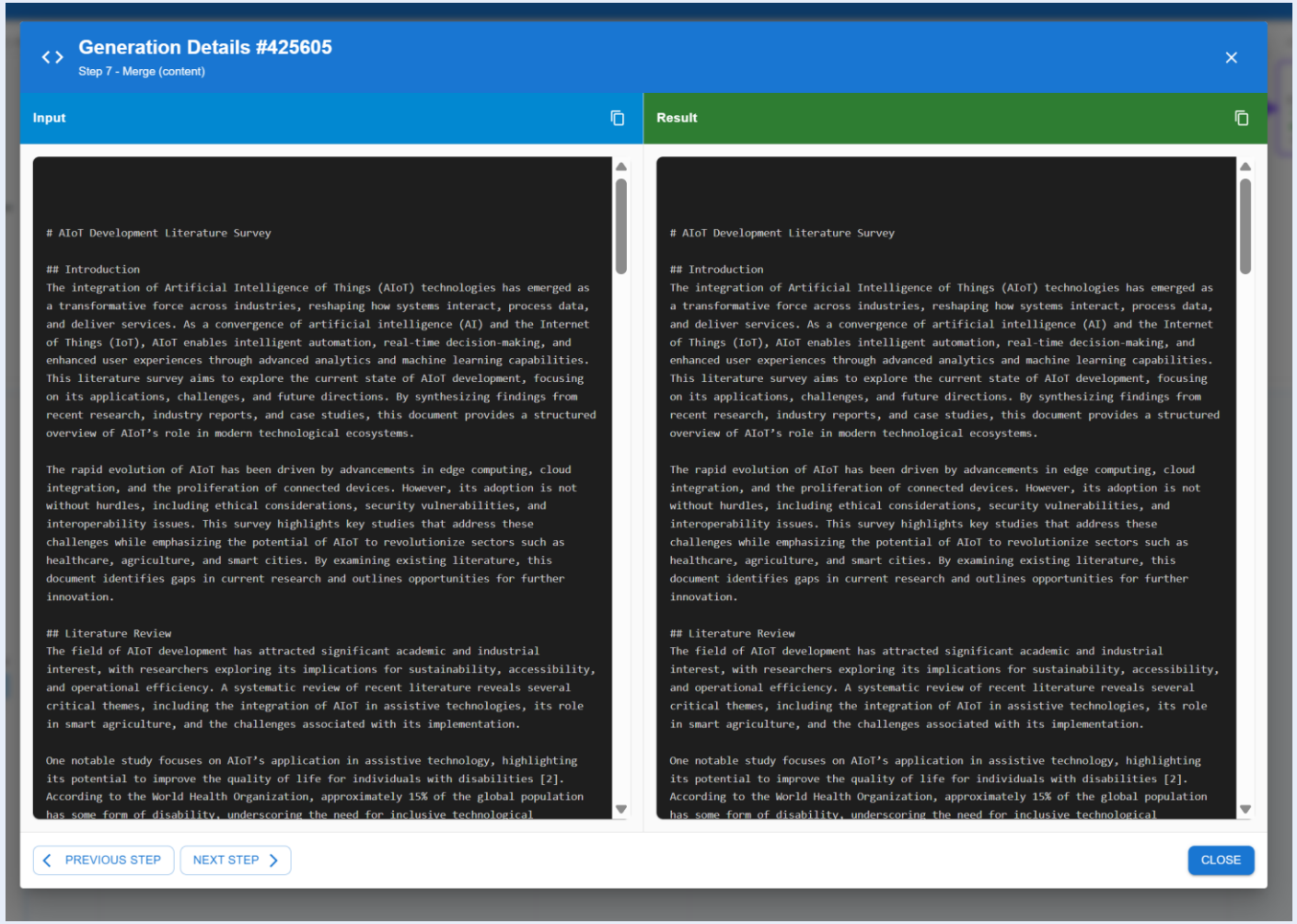
Each block in the timeline shows:

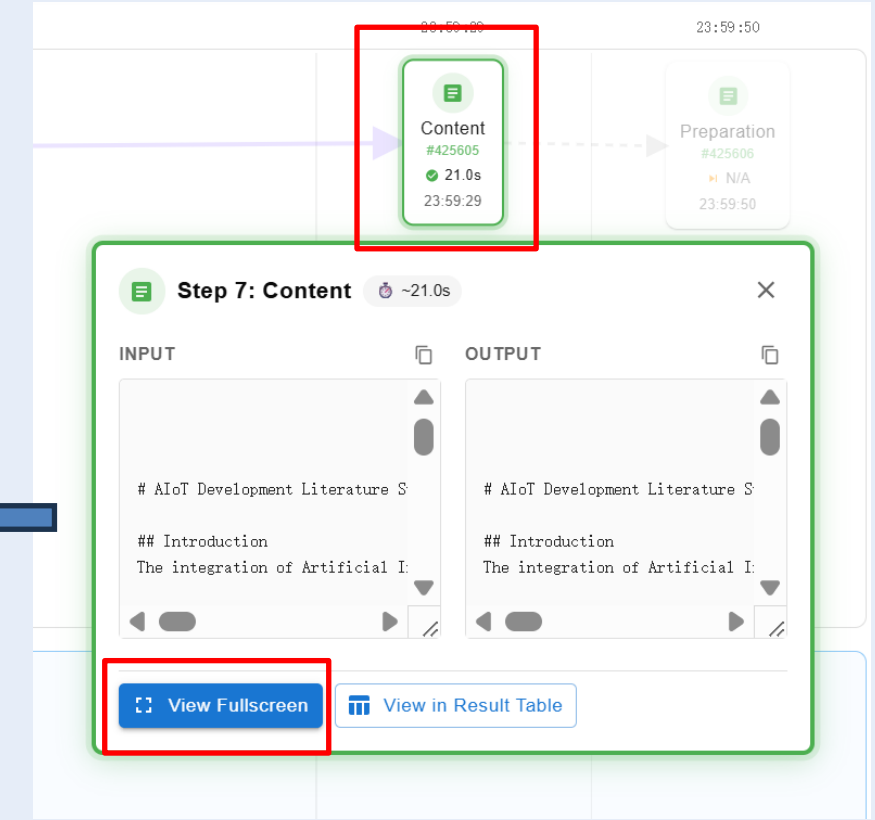
- **Status icon**
- **Execution time**
- **Click to expand** for details

Generation History Record

➢ Inspecting a Block's Details

Click on any block in the timeline to see





Practical Exercise

1. Keep this note confidential. You must NOT share to others or release to public.
2. Login Poffices.ai and then enter Creator Studio. Then click Generation History, find your task record.
3. Click to view your task(s) done by your newly created agent.
4. Compare the flow of generation of the outcomes of these tasks
5. Discuss your findings

(2) Enter your input with new prompt, check click generation.

(1) Click Agent Master to choose your newly created agent

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Advanced Prompting Technique for GenAI Agent

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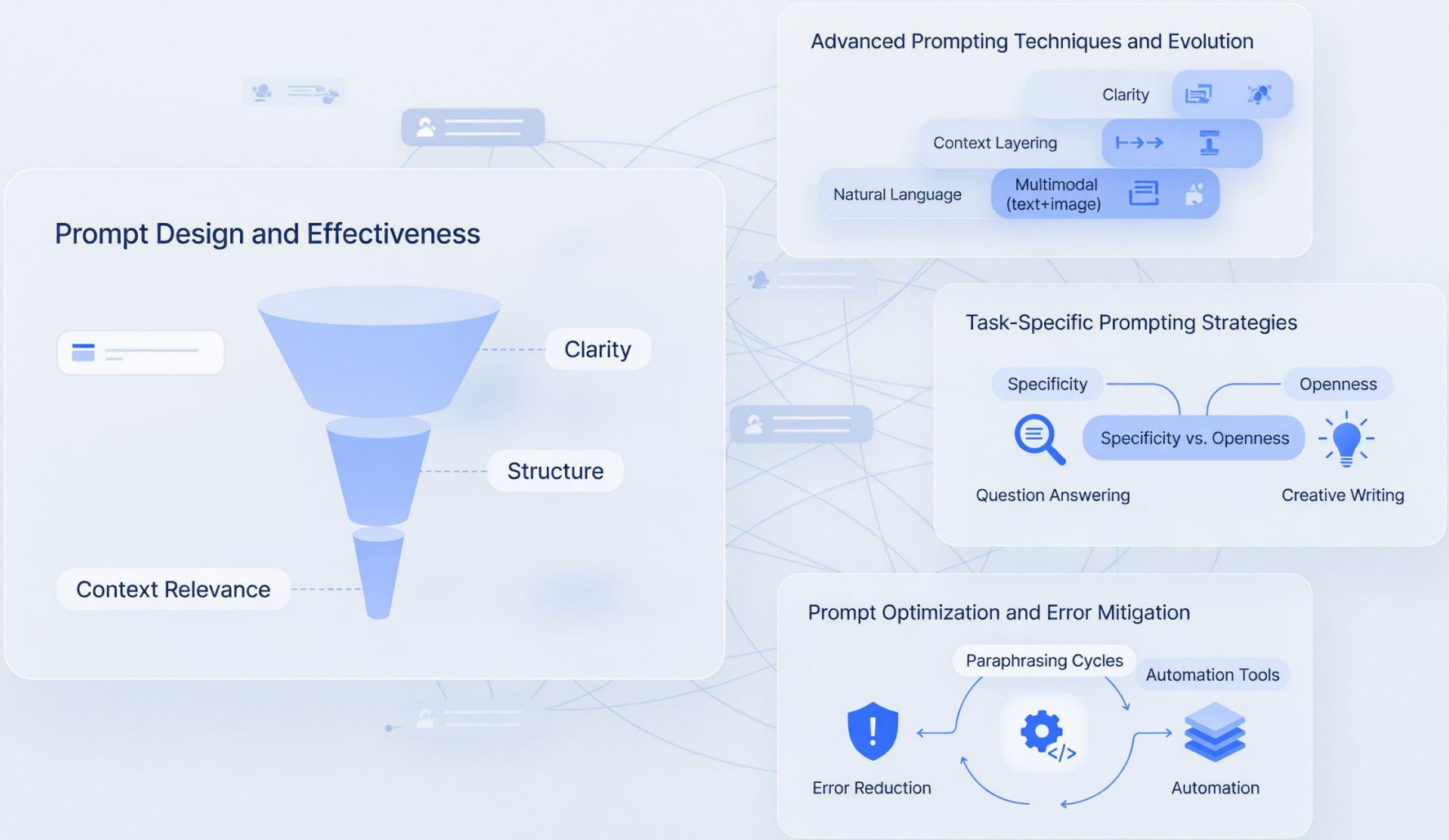
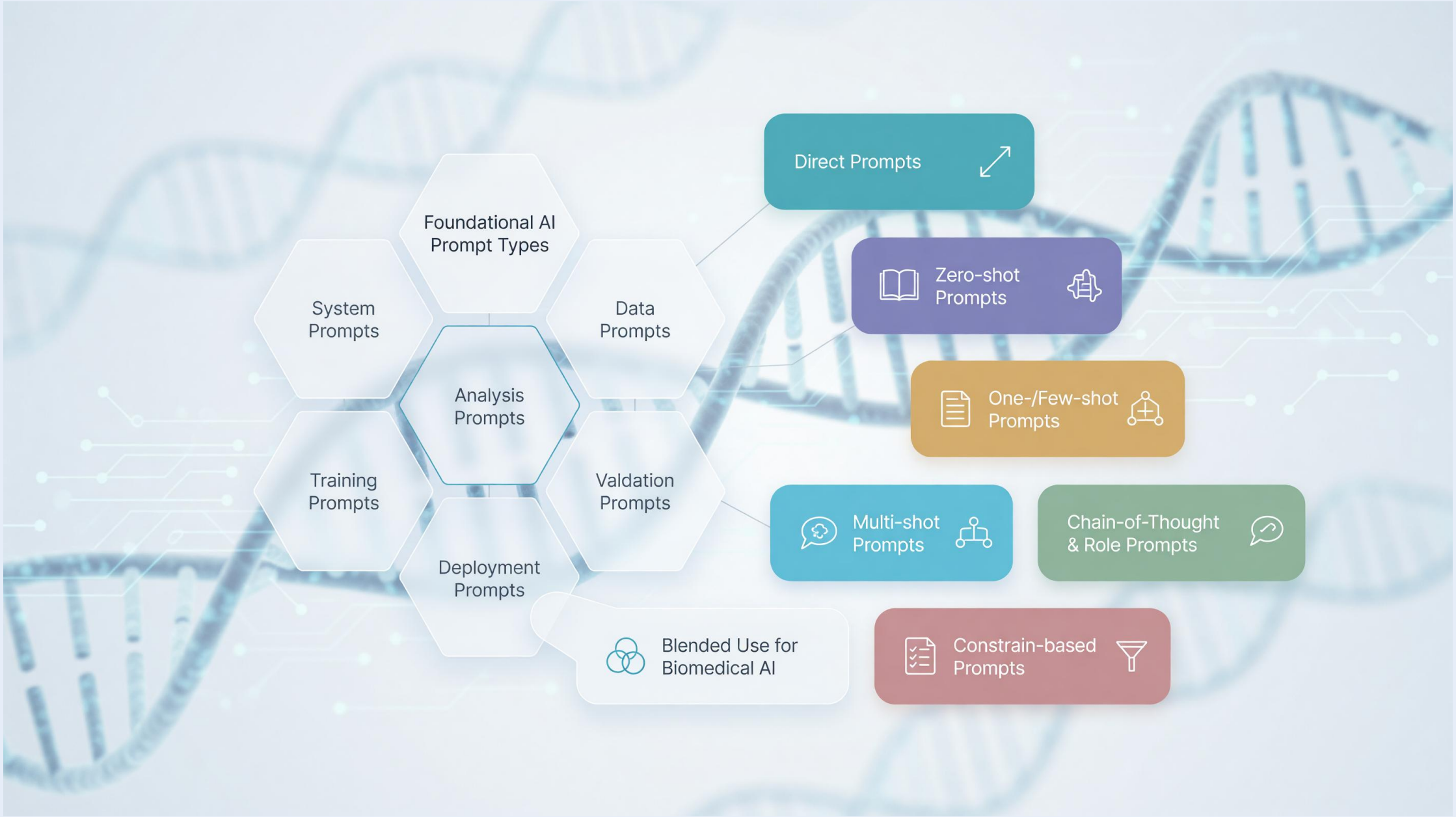
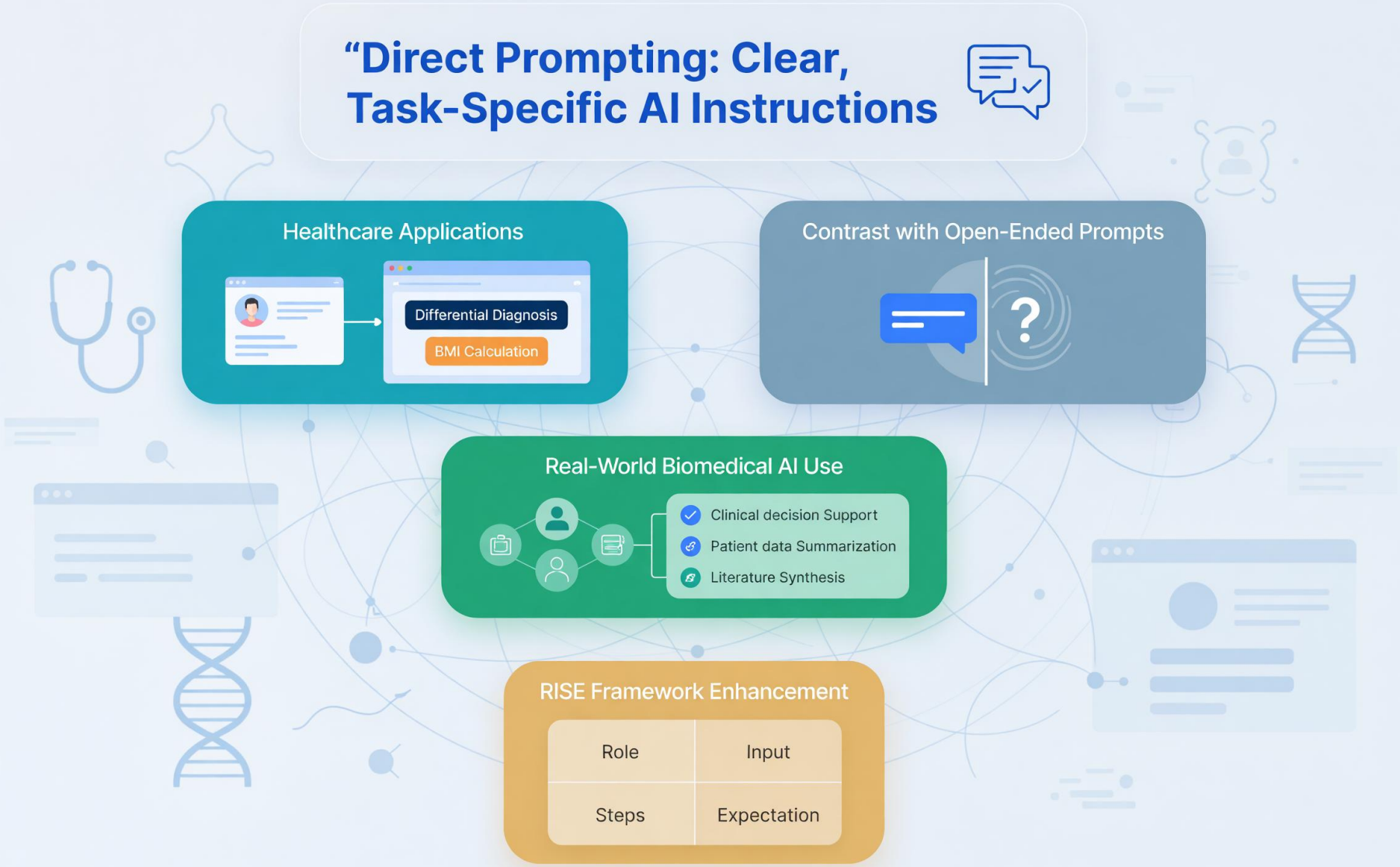
Review of Prompting



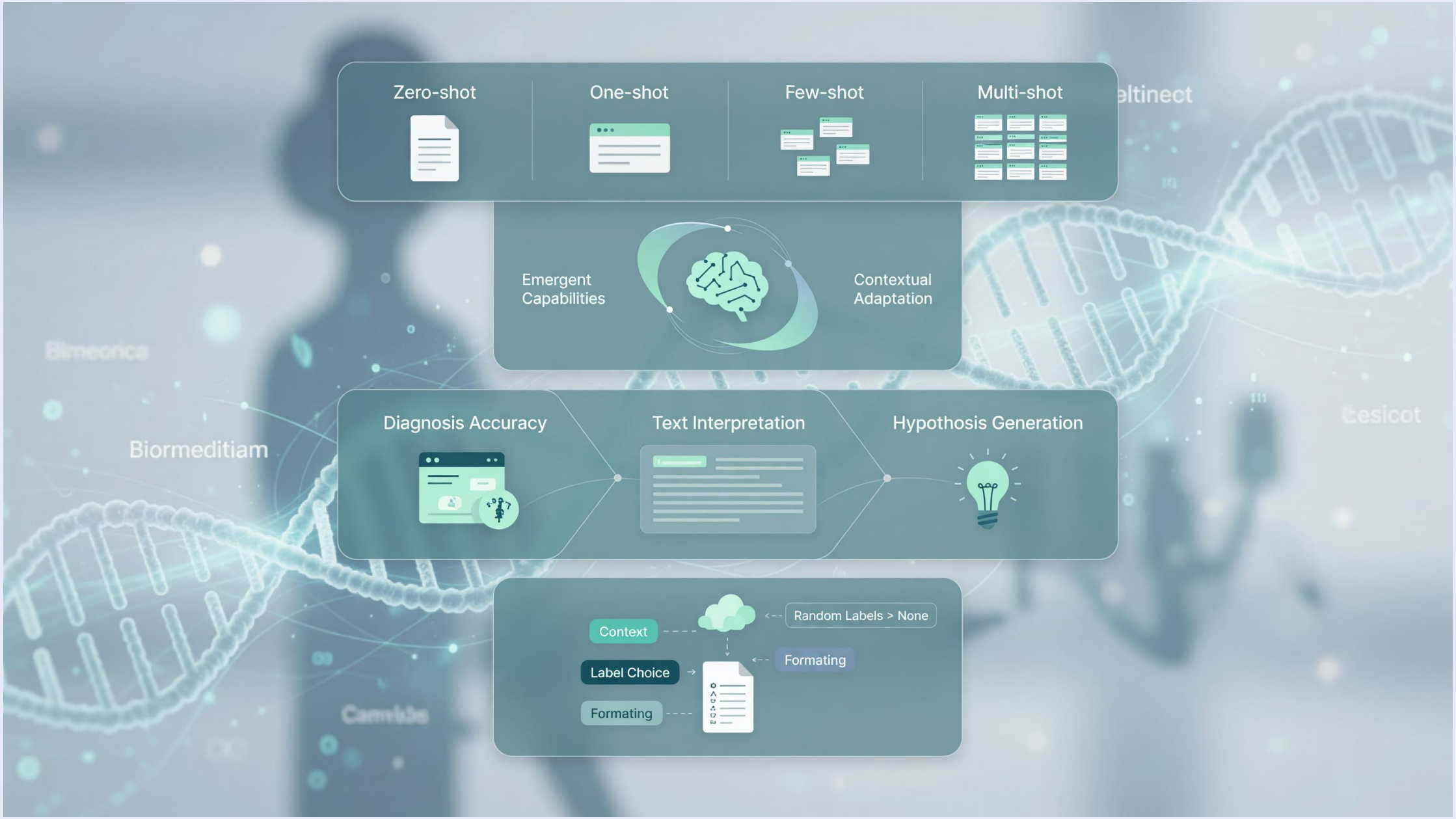
Fundamentals of Prompt Types



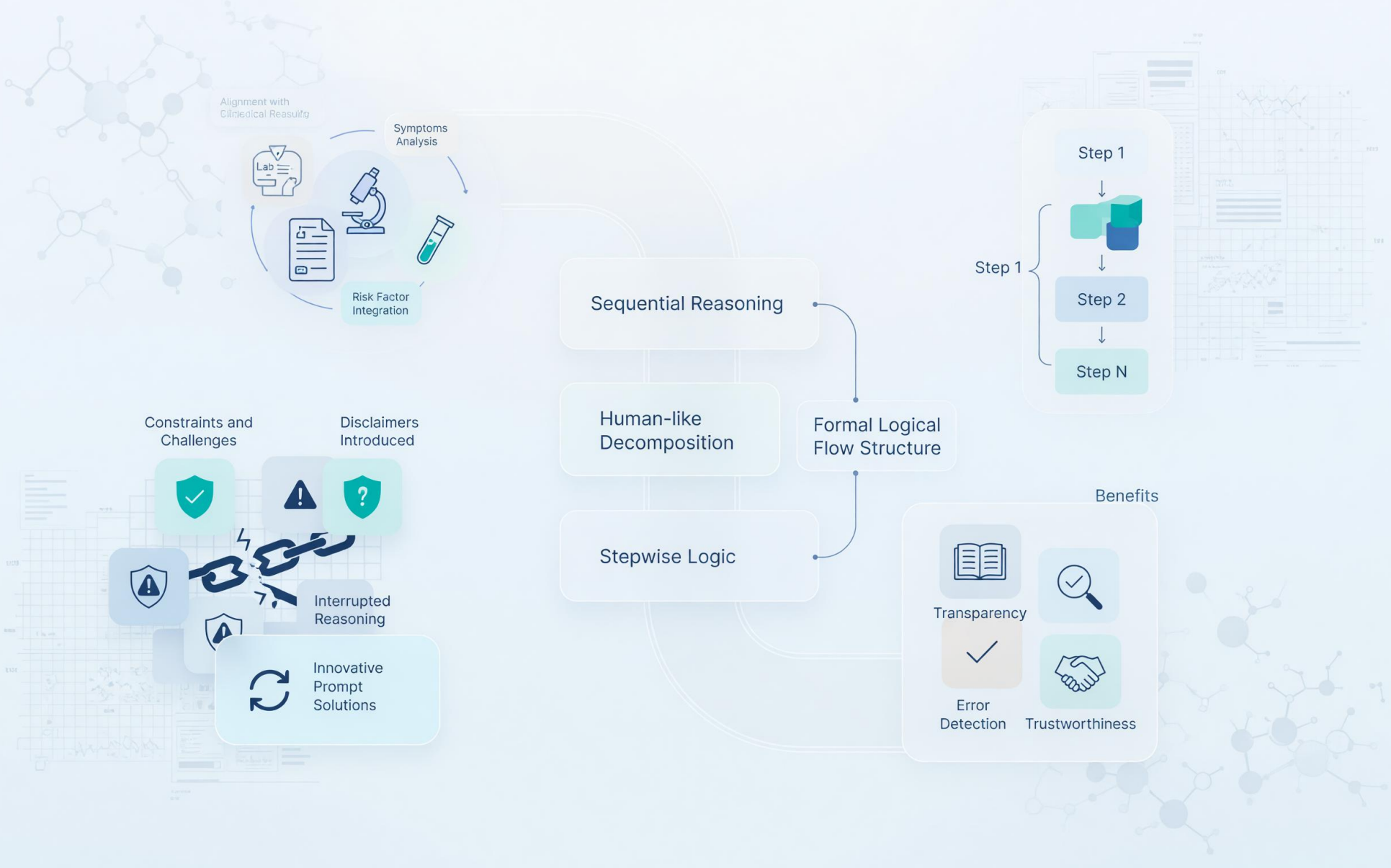
Concept of Direct Prompt



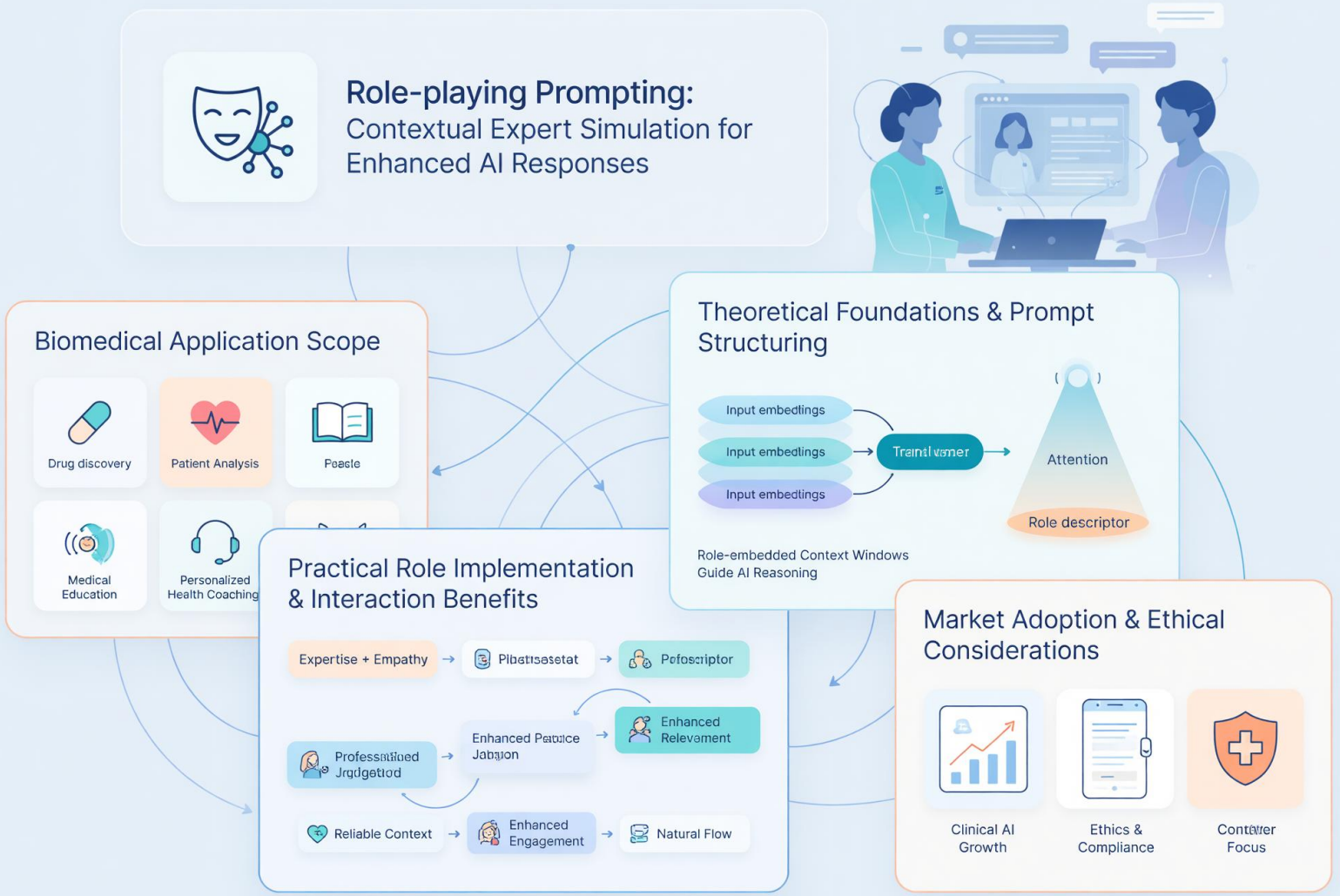
Overview of Shot-based Prompts



Principle of Chain-of-Thought Prompts



Definition and Scope of Role-playing Prompting



Concept of Constraint-based Prompting

Comparison with Other Prompt Types

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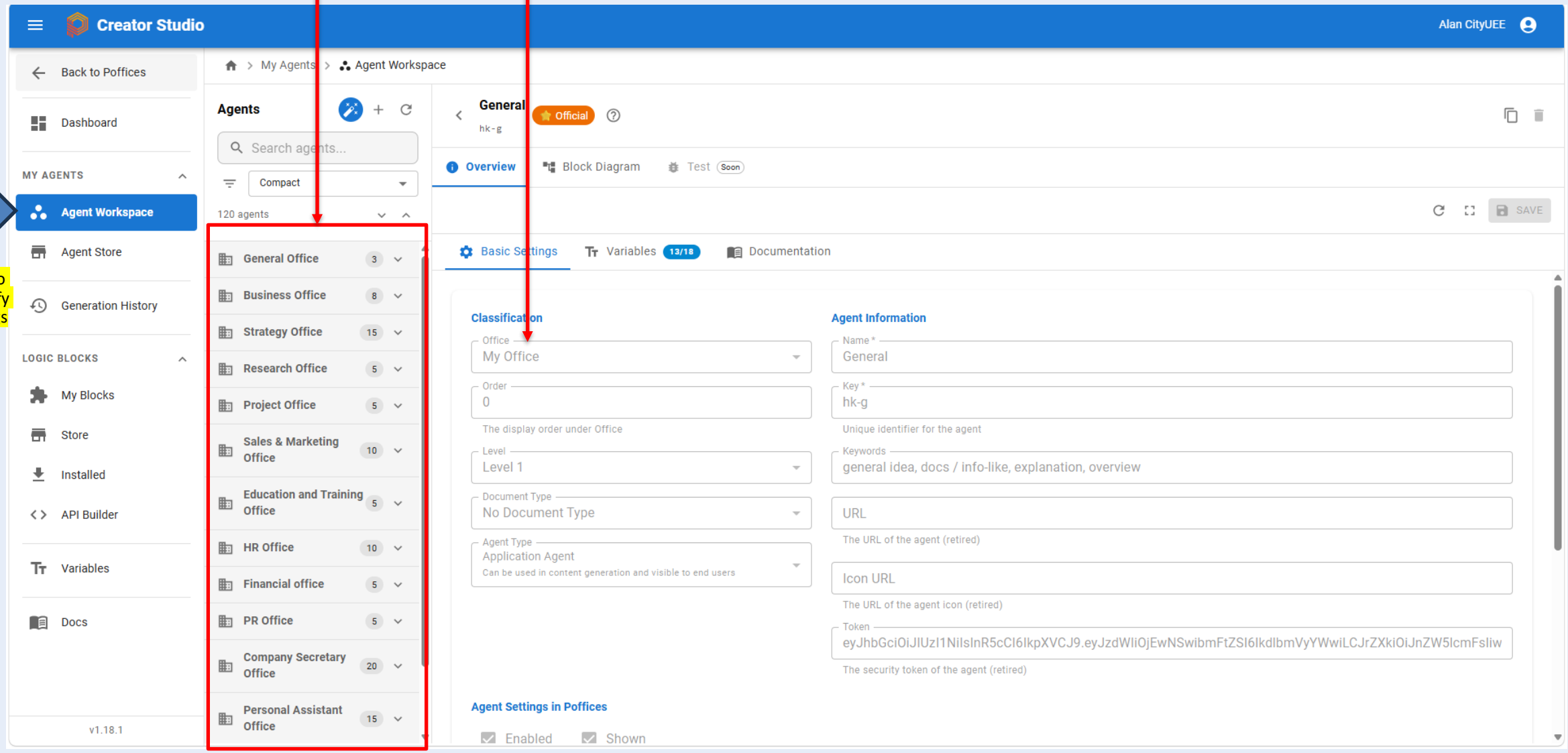
Official Agents are included in the Poffices platform. Each office includes different agents based on expertise

In Overview page for each agent, there are three settings: 1) Basic Settings 2) Variables and 3) Documentation. In the Basic Setting of your own agent under My office which is user's own office for the agent created by user

Agent Workplace to create, modify agent settings



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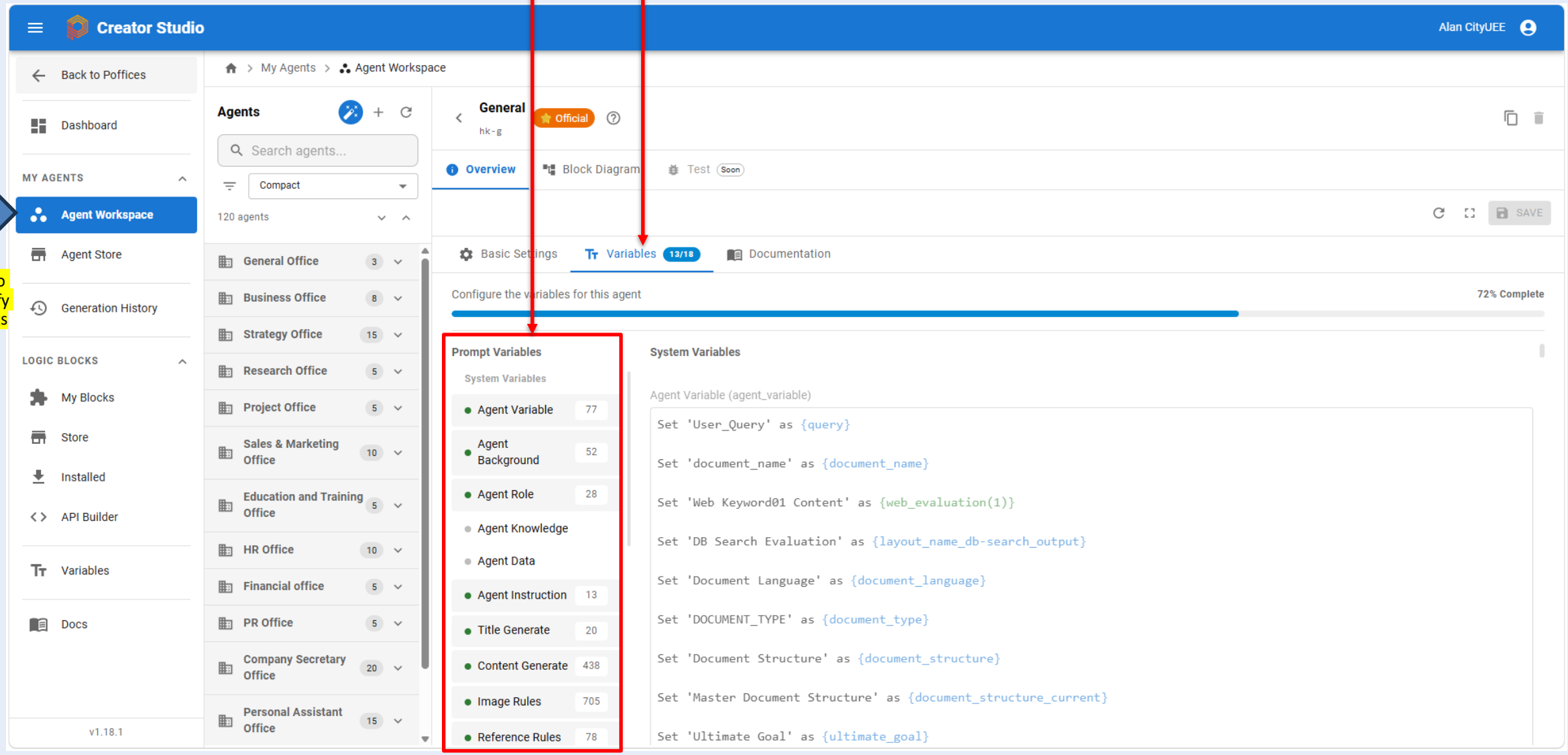
Agent Workplace to create, modify agent settings



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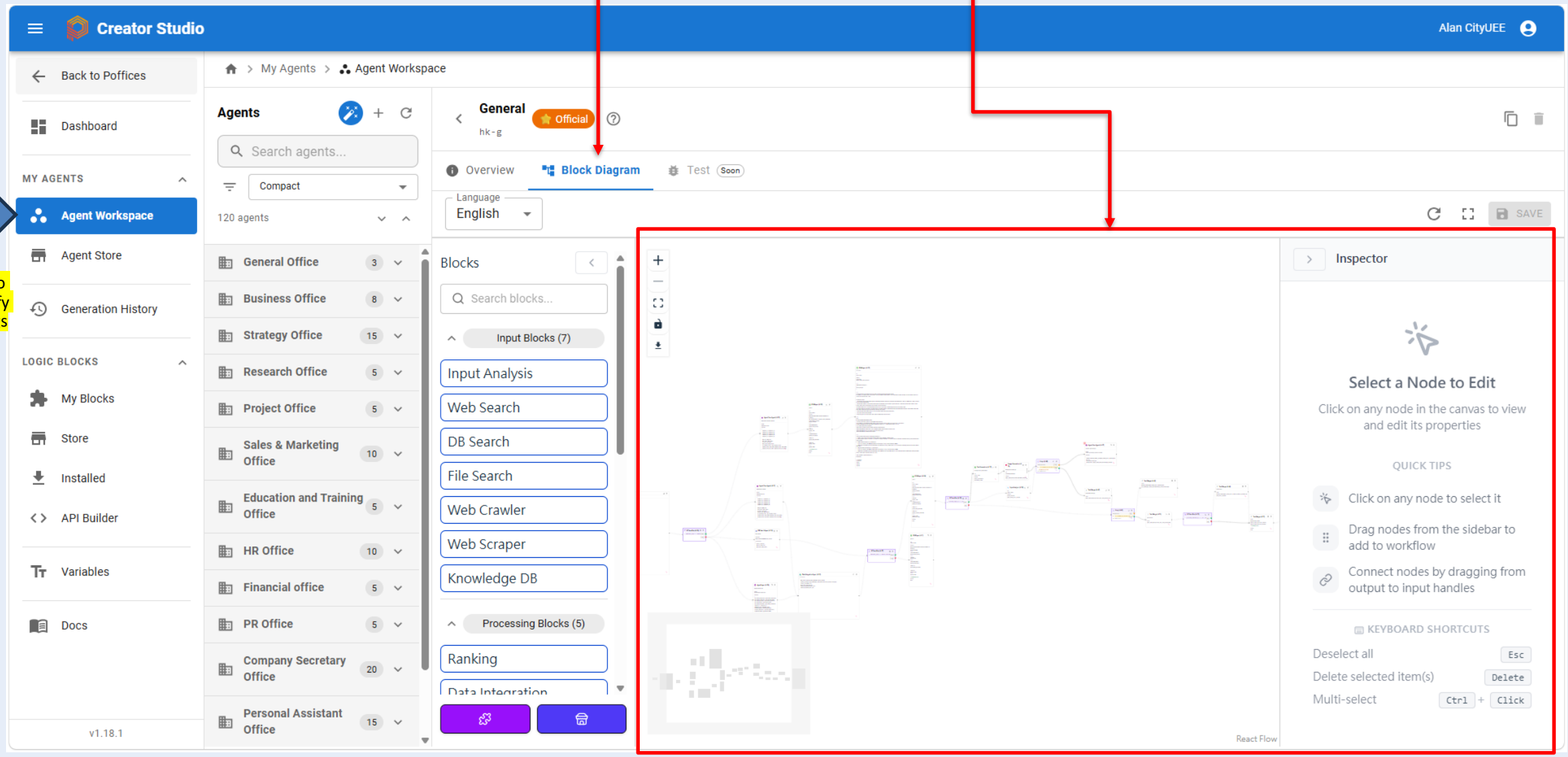
In the Block Diagram page, the agent structure has been shown in the block diagram. Each block are connected. The setting of the block are shown in Inspector in the right side. The Block setting includes the prompt setting and prompt variables for LLM input

Agent Workplace to create, modify agent settings



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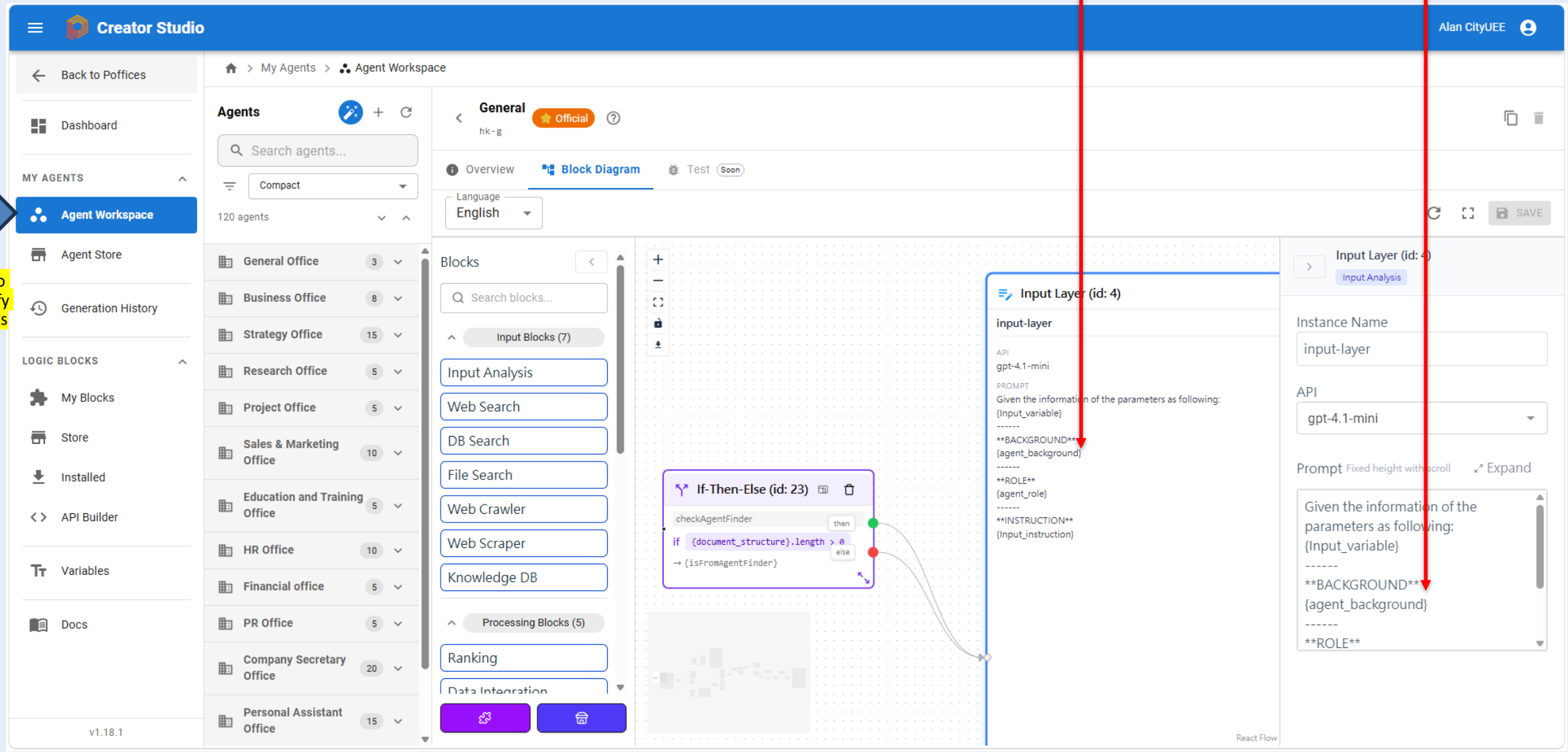
Zoom in the Block diagram, Clicking the block to show the setting of the block. For example, the input layer block is for LLM function. The setting of the block is the prompt setting where show the prompt input to LLM with prompt variables such as agent_background.

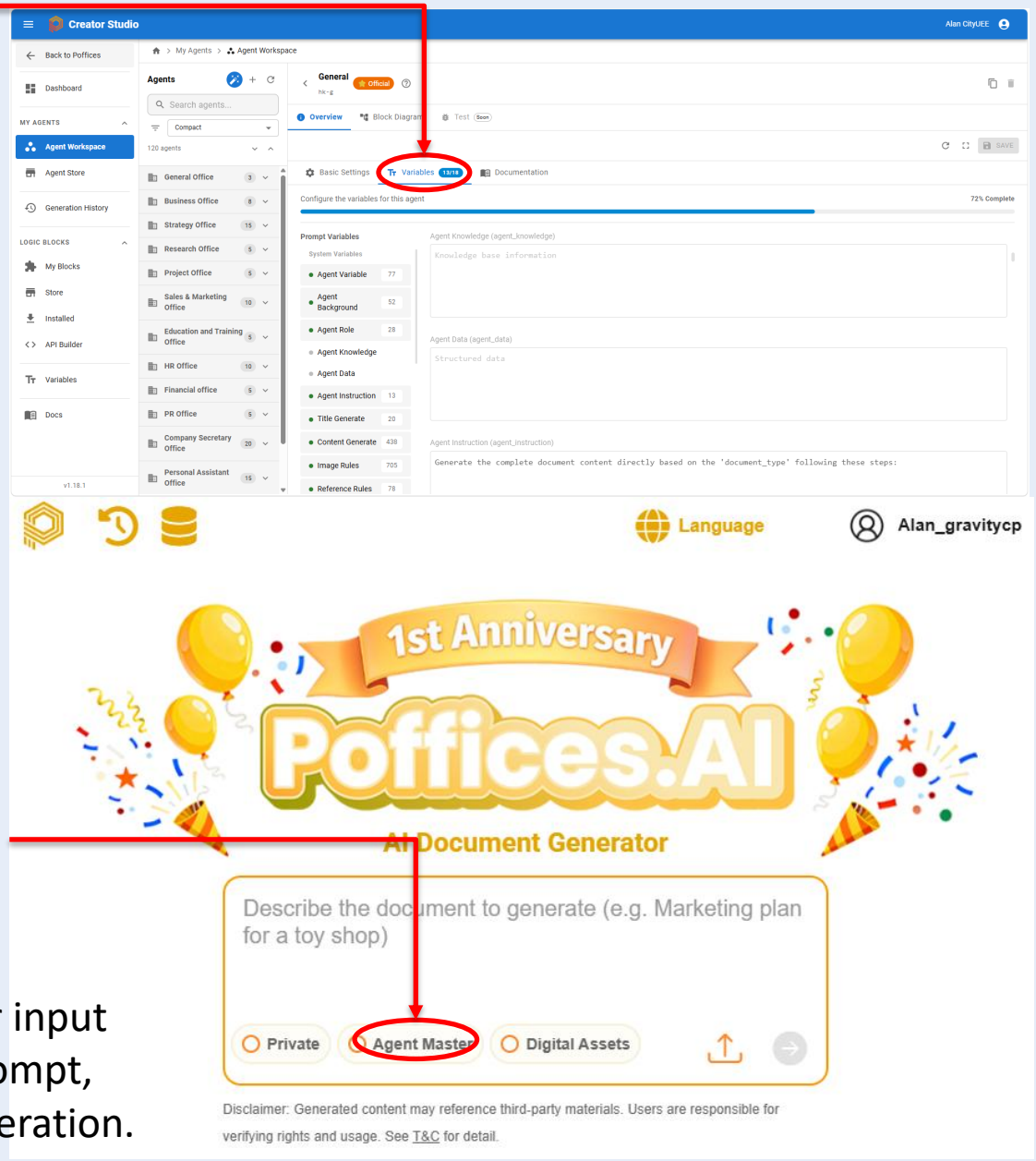
Agent Workplace to create, modify agent settings



Practical Exercise

1. Keep this note confidential. You must NOT share to others or release to public.
2. Login Creator Studio
3. Follow the above procedure to modify the system prompt for better enhancement using the prompt engineering technique
4. Test the newly created agent with the modified system prompt or new input prompt to generate new document.
5. Compare the outcome with previous result.

Enhance the system prompt to upgrade to domain specific agent



(1) Click Agent Master to choose your newly created agent

(2) Enter your input with new prompt, check click generation.

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Educational GenAI Agent Design

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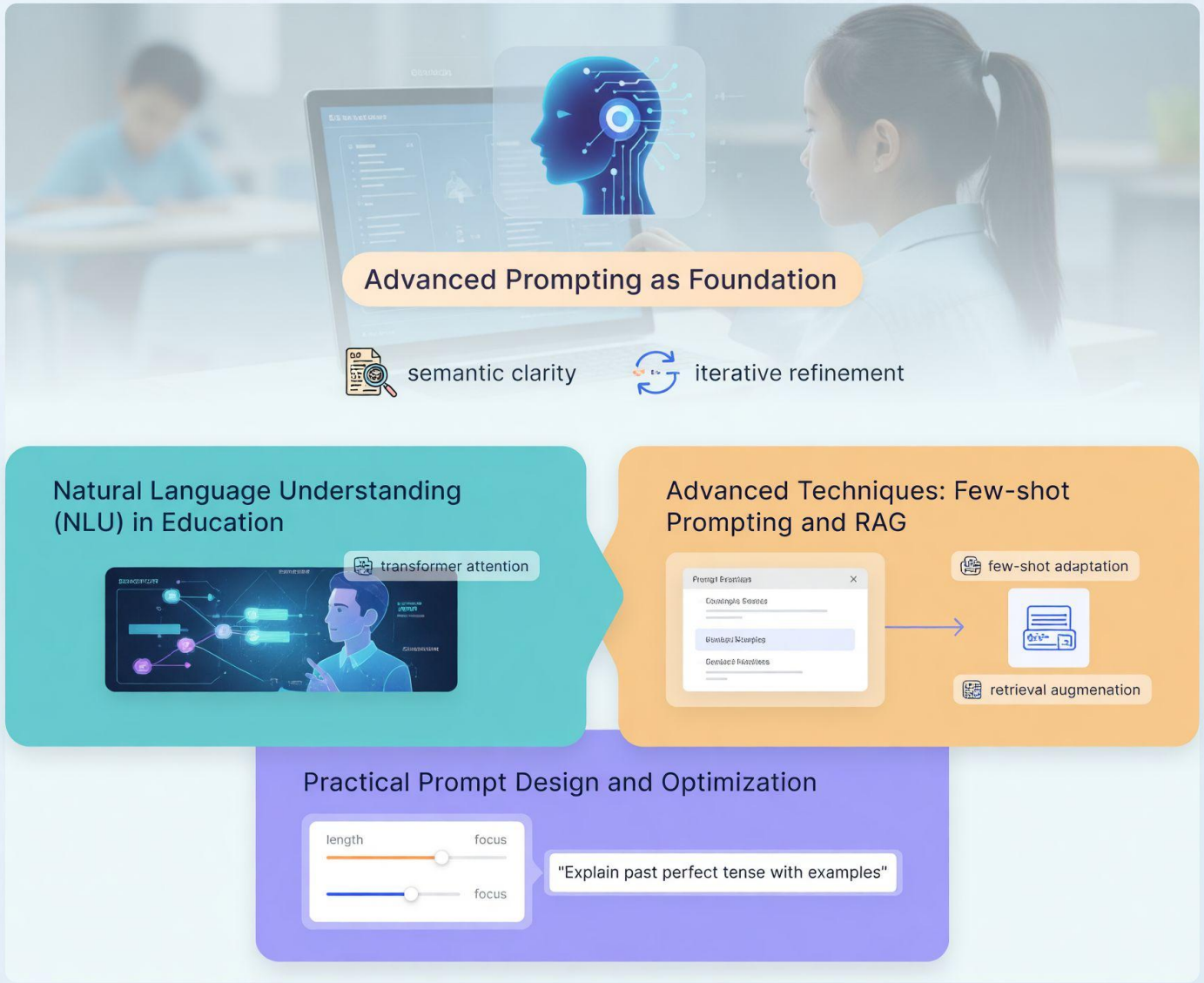
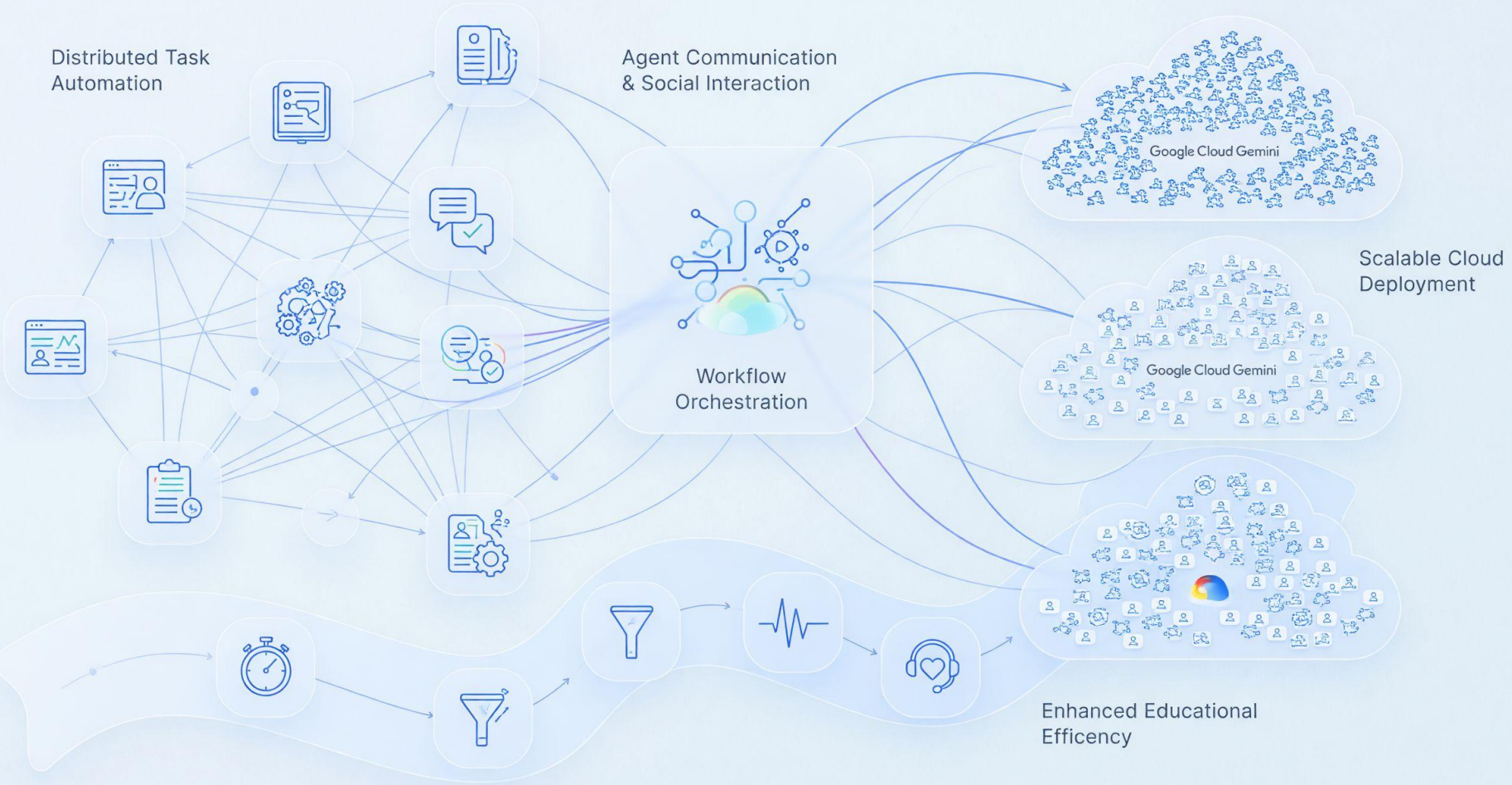
Advanced Prompting and Natural Language Adoption

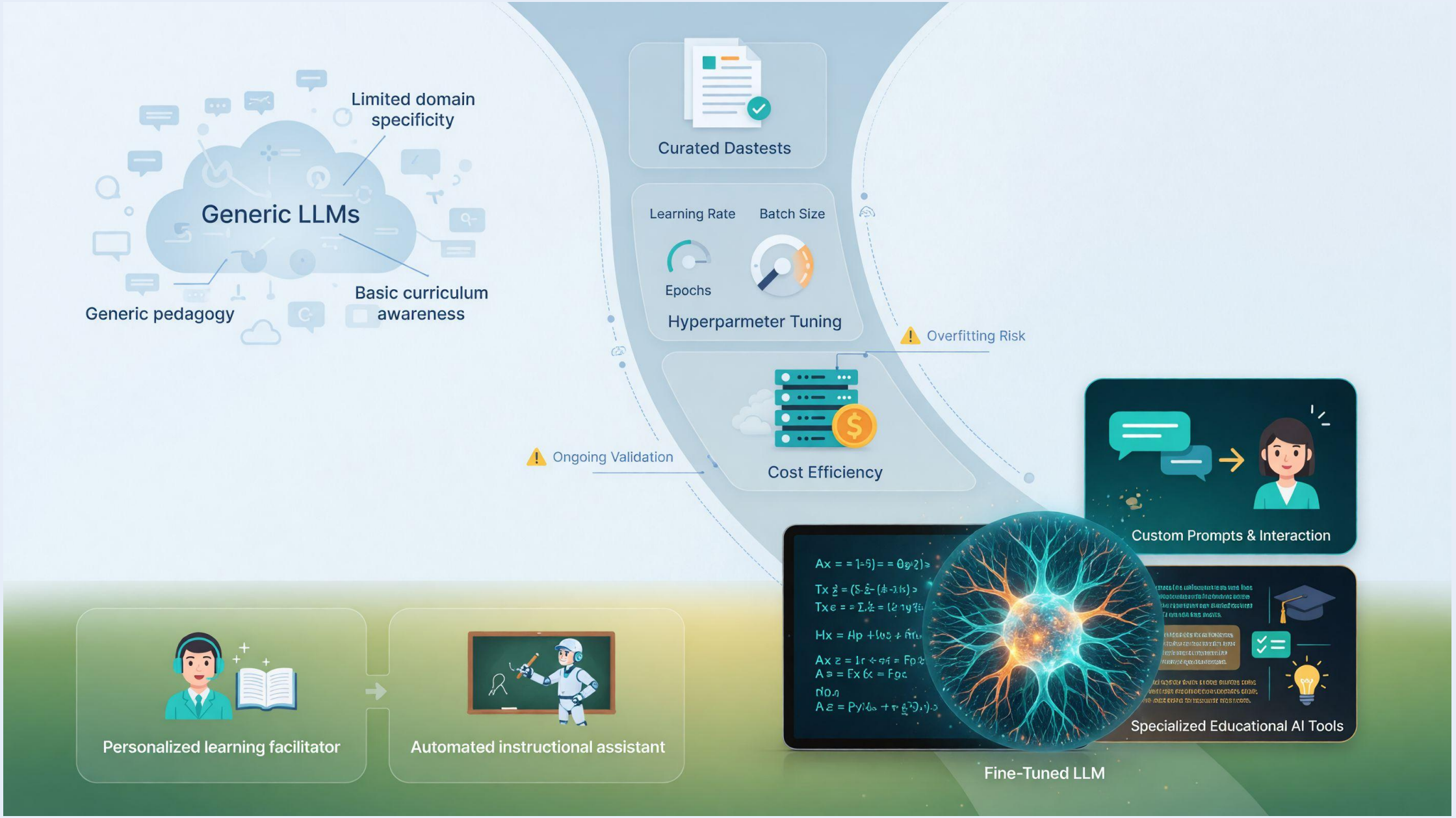


Workflow Automation with Multi-Agent Systems



Integrating different functional blocks for Agent Development

Fine-Tuning and Customizing GenAI agents for Educational Needs



Ethical and Legal Considerations in GenAI Development

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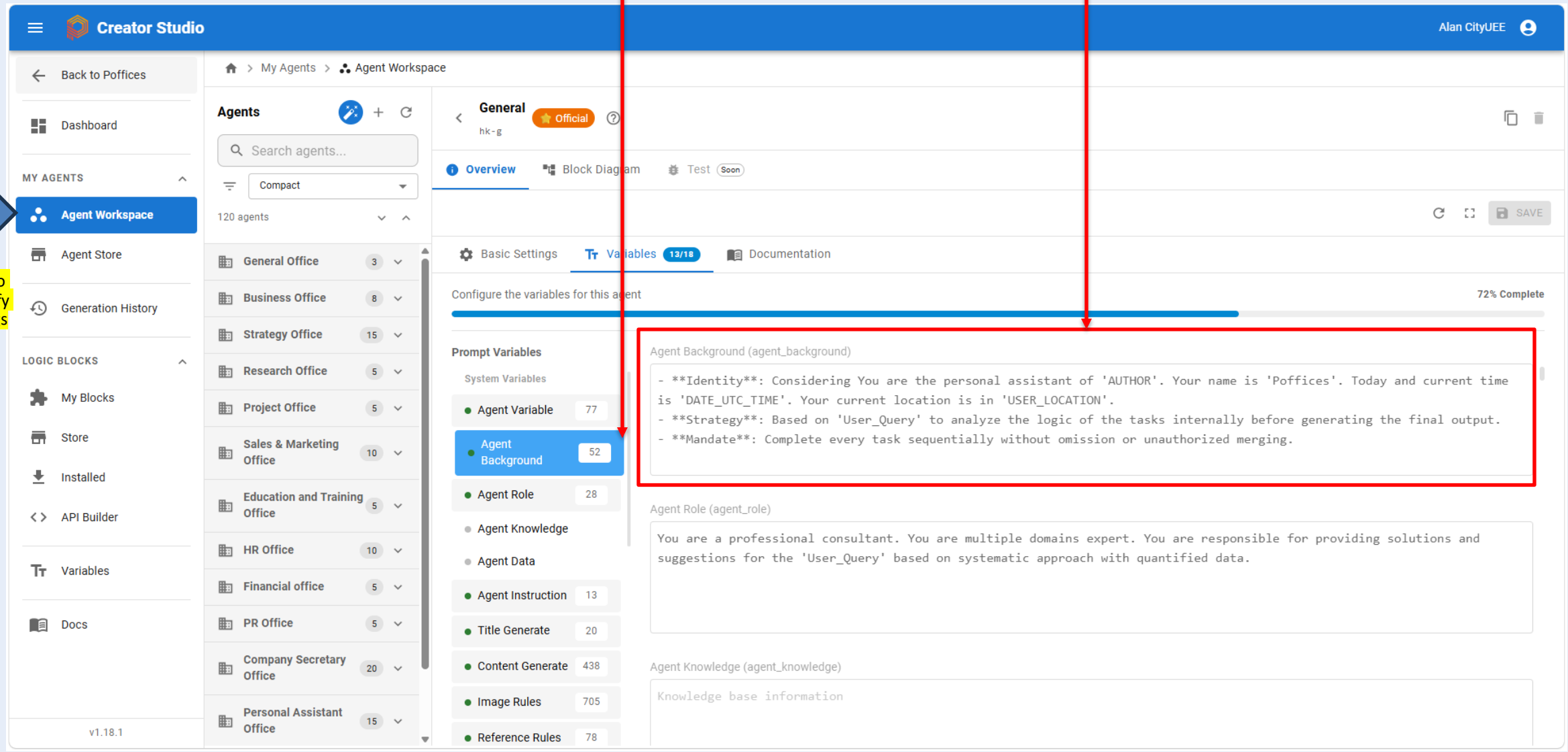
As shown in the block diagram, the input layer is the LLM block. The variables shown in the block setting about the prompt are referred to the Overview page under Variables sub-page. Click the variable in the lefthand side to view the detail in righthand side

Agent Workplace to create, modify agent settings



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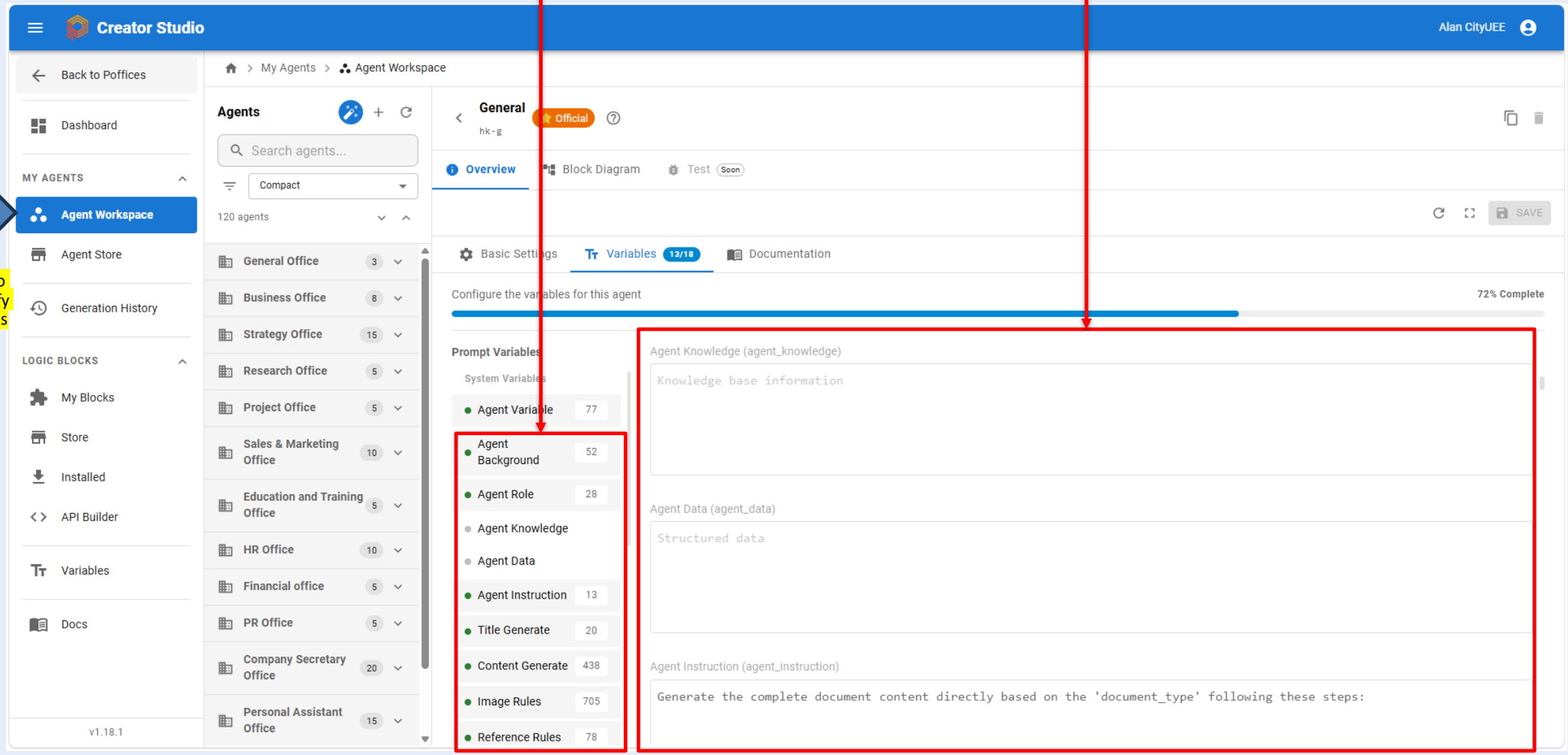
Although the initial prompt was created by the Agent Wizard, the system prompt is general. User can modify the prompt as the domain specific prompt and the knowledge and related data can be added as the initial agent system prompt variables

Note: Other method to upgrade the agent to be domain specific agent is to provide more information by 1) input by user query, 2) uploading file, 3) connecting to database, 4) connecting to file server, 5) connecting to web server

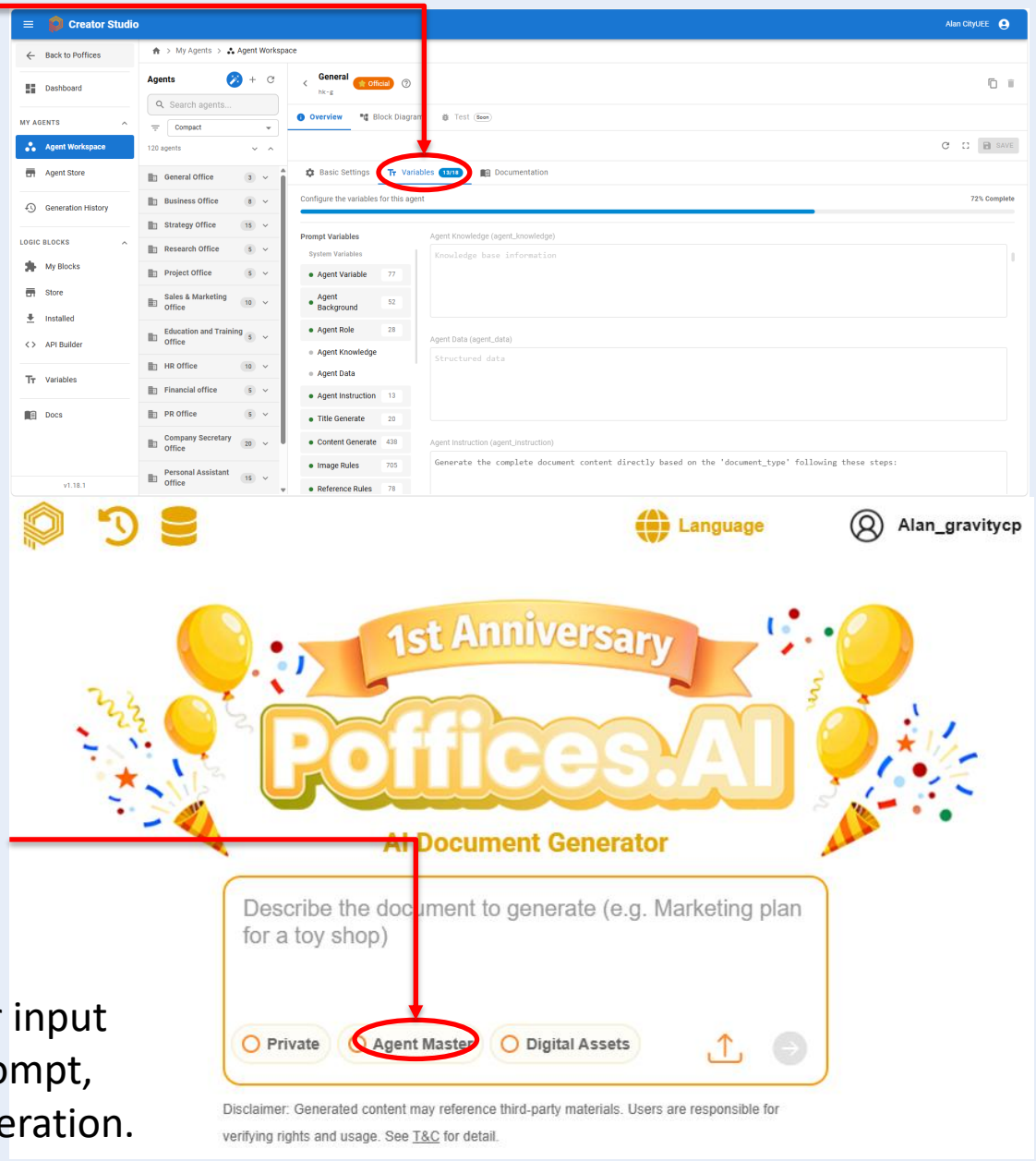
Agent Workplace to create, modify agent settings



Practical Exercise

1. Keep this note confidential. You must NOT share to others or release to public.
2. Login Creator Studio
3. Based on the above concept to modify the agent design
4. Test the newly created agent with the new domain-specific system prompt for the educational agent design
5. Compare the outcome with previous result.

Modify the prompt correspondingly



(1) Click Agent Master to choose your newly created agent

(2) Enter your input with new prompt, check click generation.

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Workflow Automation with Multi-Agent Systems

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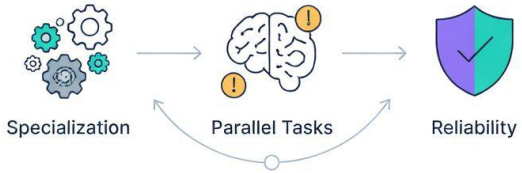
Concepts of Multi-Agent Systems

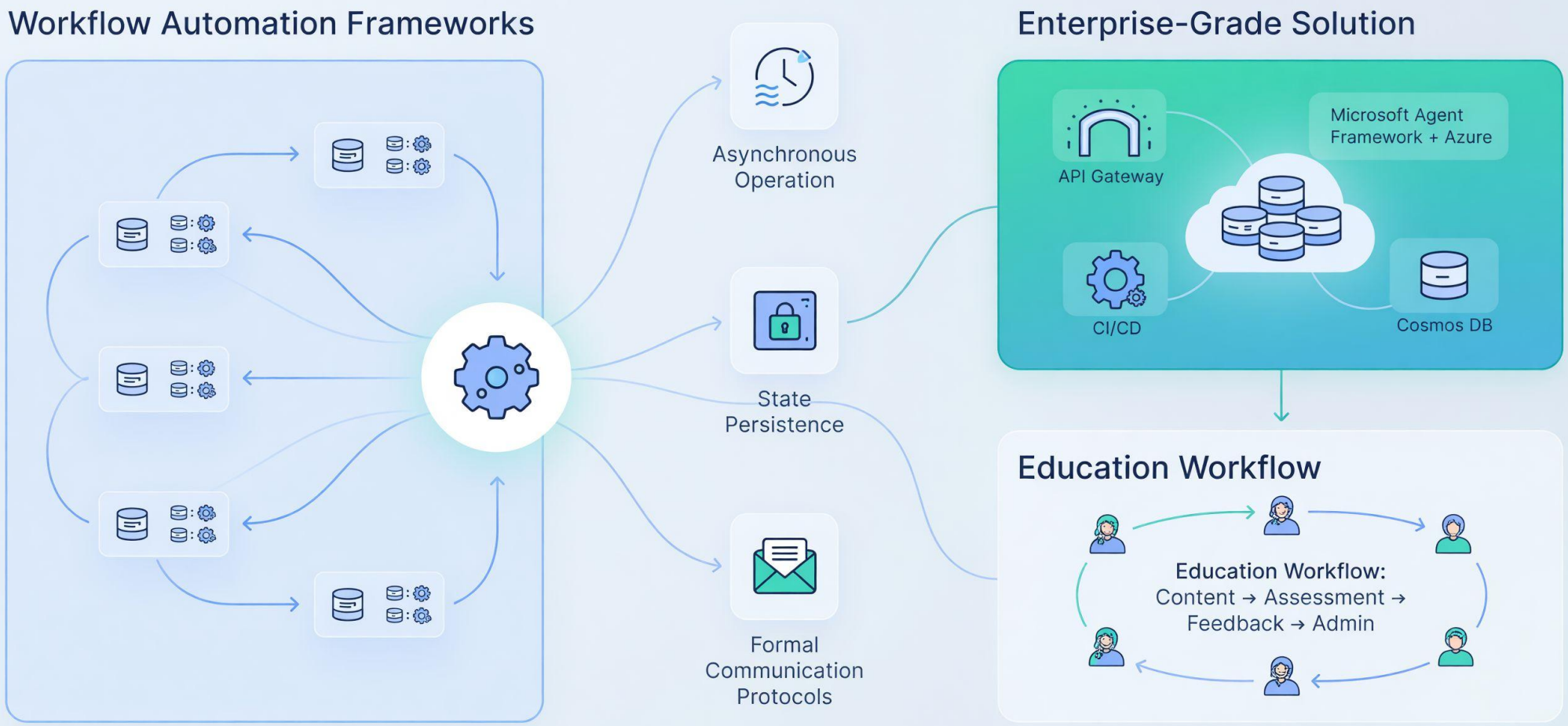
Multi-Agent Systems

Key Characteristics

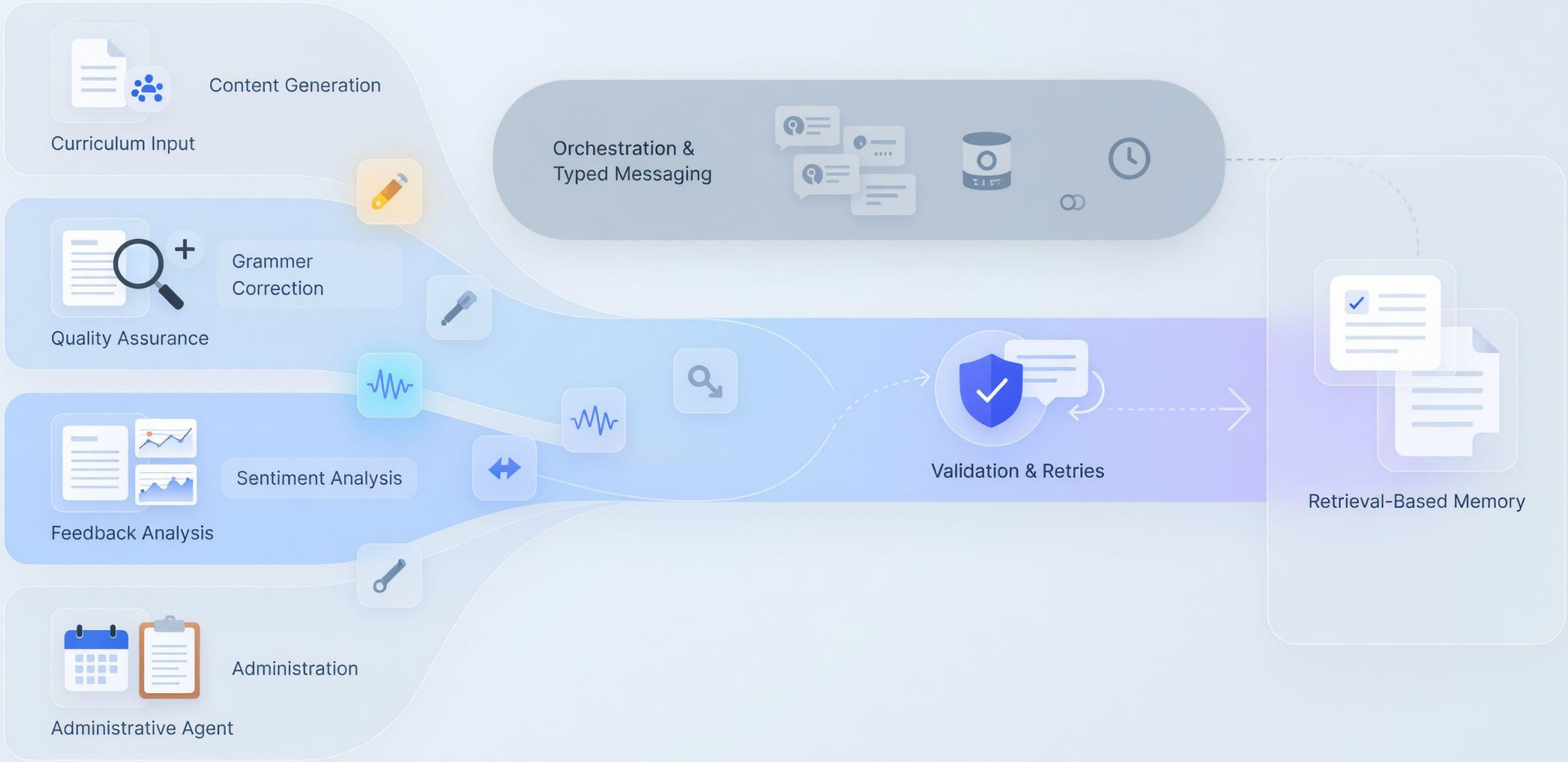
Rationale and Applications



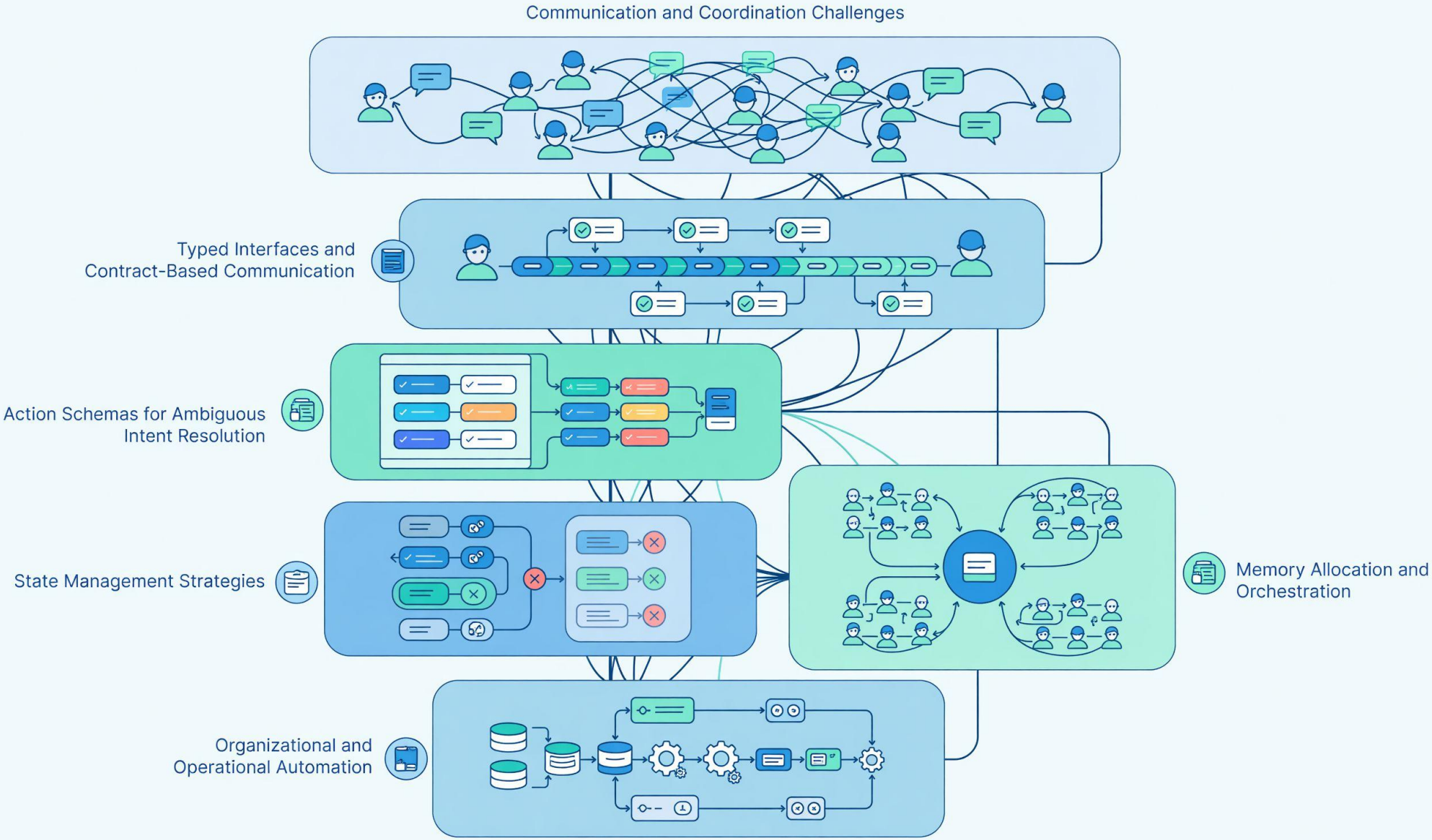
Workflow Automation Frameworks



Examples of Workflow Design



Challenges and Solutions

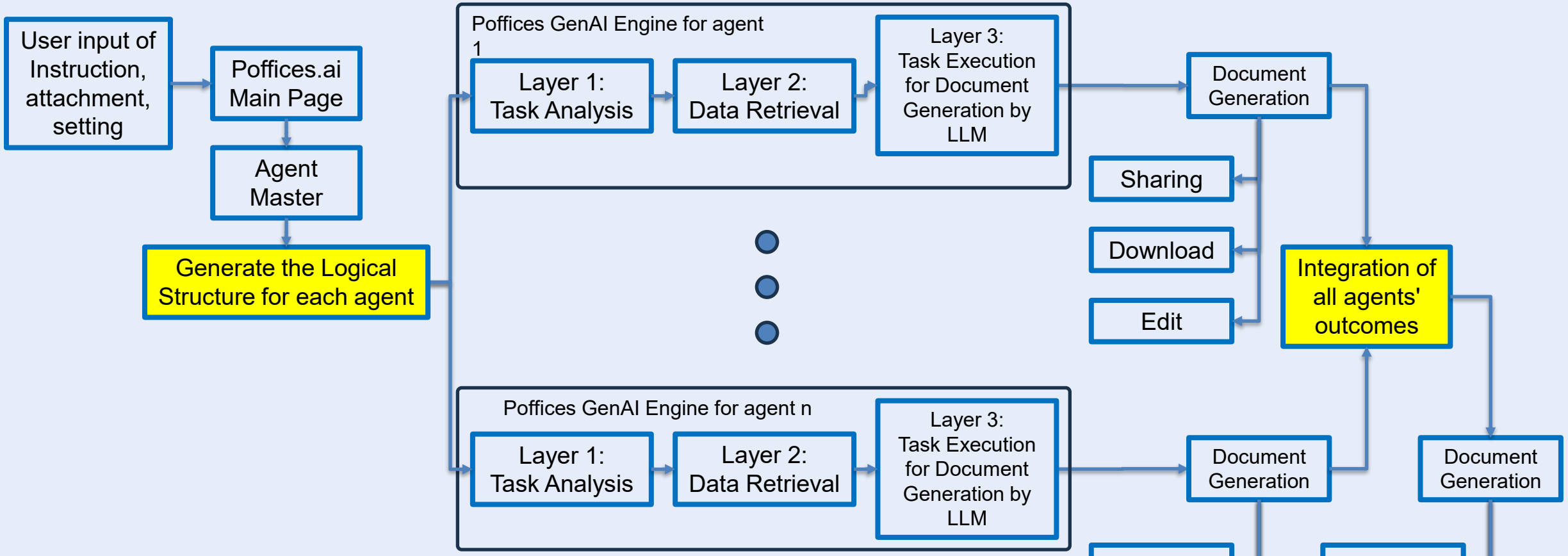


Introduction to Agent Master

Poffices.AI

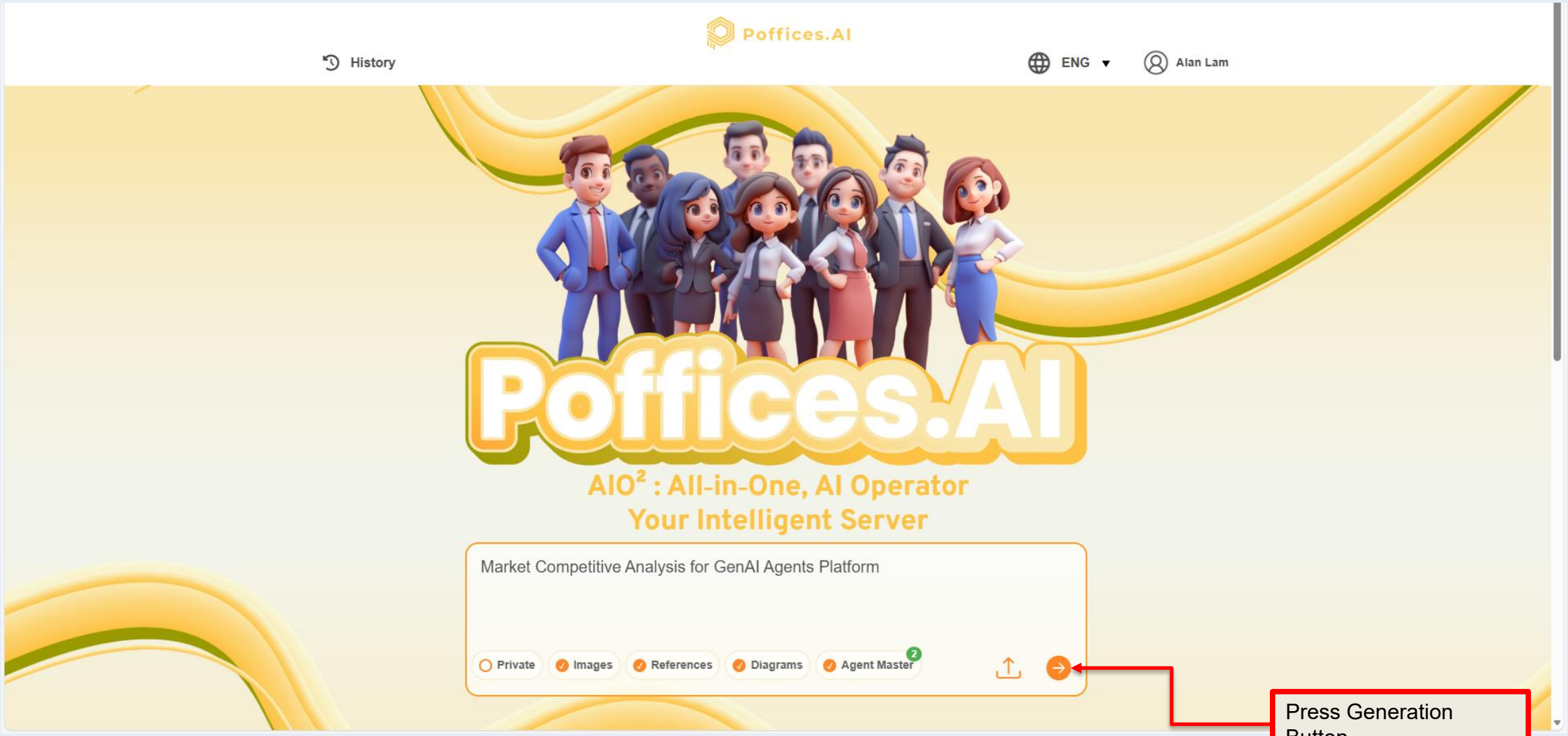
Poffices.AI Agent Master Function

Structure of GenAI Multi-Agents Platform

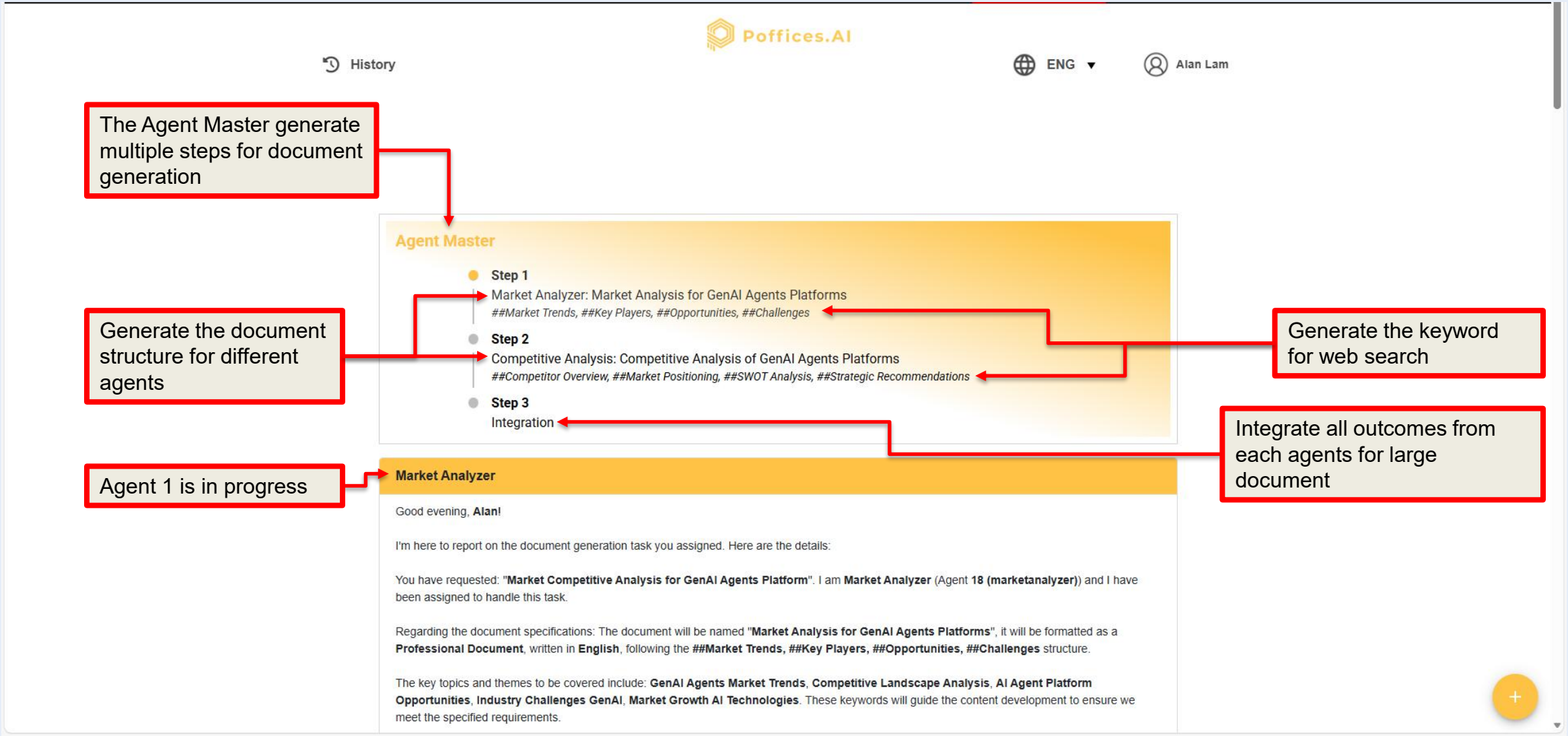


1. User can select multiple agents in the Agent Master.
2. Agent Master will base on the user input to generate the structure of each agent.
3. Pass the document structure to each agent and the content for each chapter will be generated by agents in sequence accordingly
4. All the outcomes from different agents will be integrated as final outcome.

GenAI Multi-Agents Platform



GenAI Multi-Agents Platform



GenAI Multi-Agents Platform

Generate the outcome from agent 1

Market Analysis for GenAI Agents Platforms

Introduction

The rapid evolution of artificial intelligence (AI) has positioned generative AI (GenAI) as a transformative force across industries. Among its many applications, **AI agents**—autonomous systems capable of executing tasks through natural language processing and machine learning—are emerging as a critical innovation within the GenAI landscape. As businesses seek to leverage AI for efficiency, personalization, and competitive advantage, the market for GenAI agents platforms is expanding rapidly. This analysis aims to evaluate the current state of the market, identify key players, and explore opportunities and challenges shaping the industry. By integrating qualitative and quantitative research methods, this document provides actionable insights for stakeholders aiming to navigate the complexities of the GenAI agents sector.

The scope of this analysis includes examining **target demographics**, **market trends**, **consumer preferences**, and the broader competitive environment. With the global AI market projected to reach **HKD 4.8 trillion by 2033** [5], the demand for GenAI agents platforms is expected to grow exponentially. This document will also highlight the role of strategic positioning, technological advancements, and regulatory considerations in shaping the future of the market.

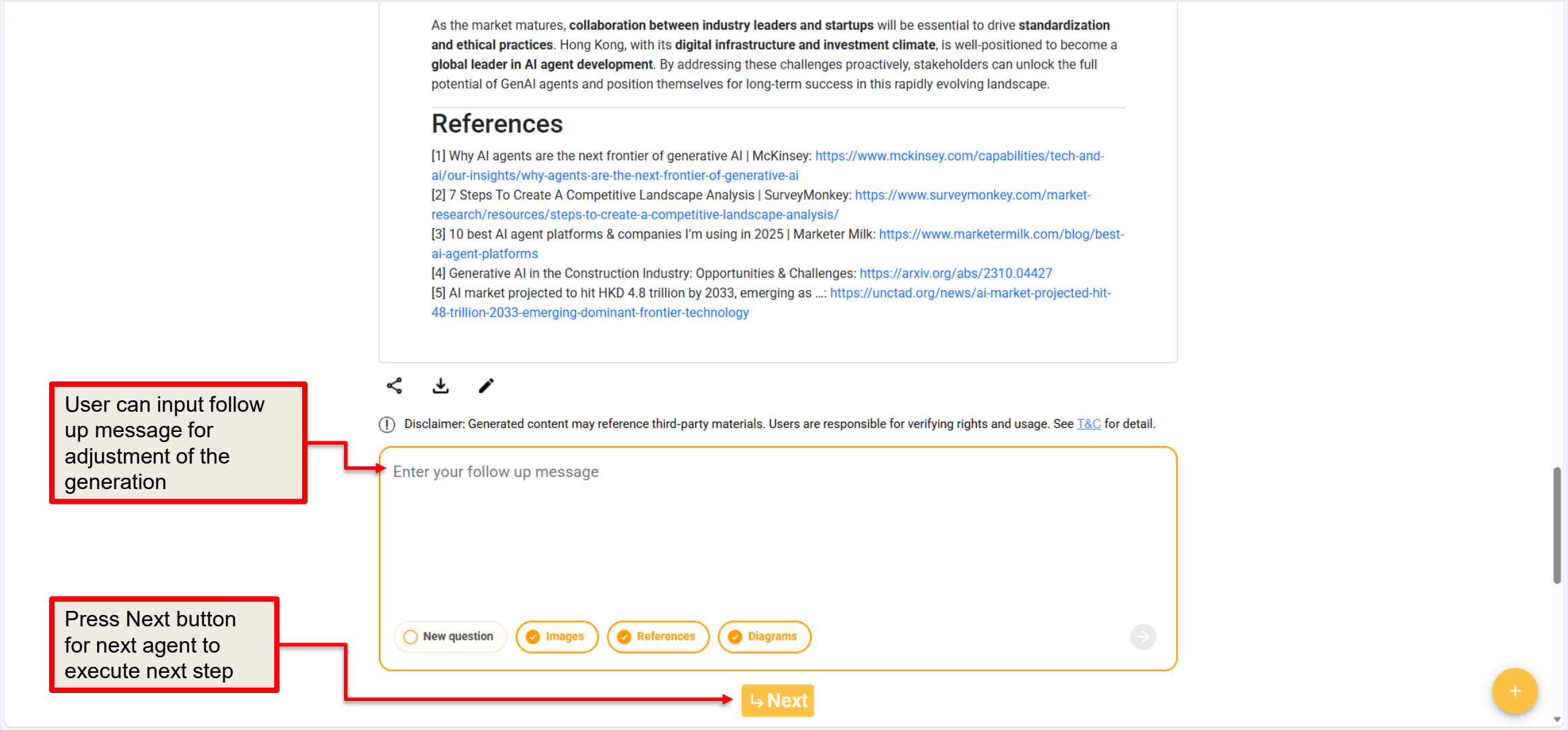
Market Trends

The adoption of GenAI agents platforms is driven by their ability to automate complex workflows and enhance decision-making processes. According to McKinsey's report, **AI agents are the next frontier of generative AI**, particularly in fields such as online marketing, where the workflow involves translating business objectives into creative outputs [1]. This trend underscores the increasing integration of AI agents into enterprise operations, enabling real-time data analysis, personalized customer interactions, and predictive modeling.

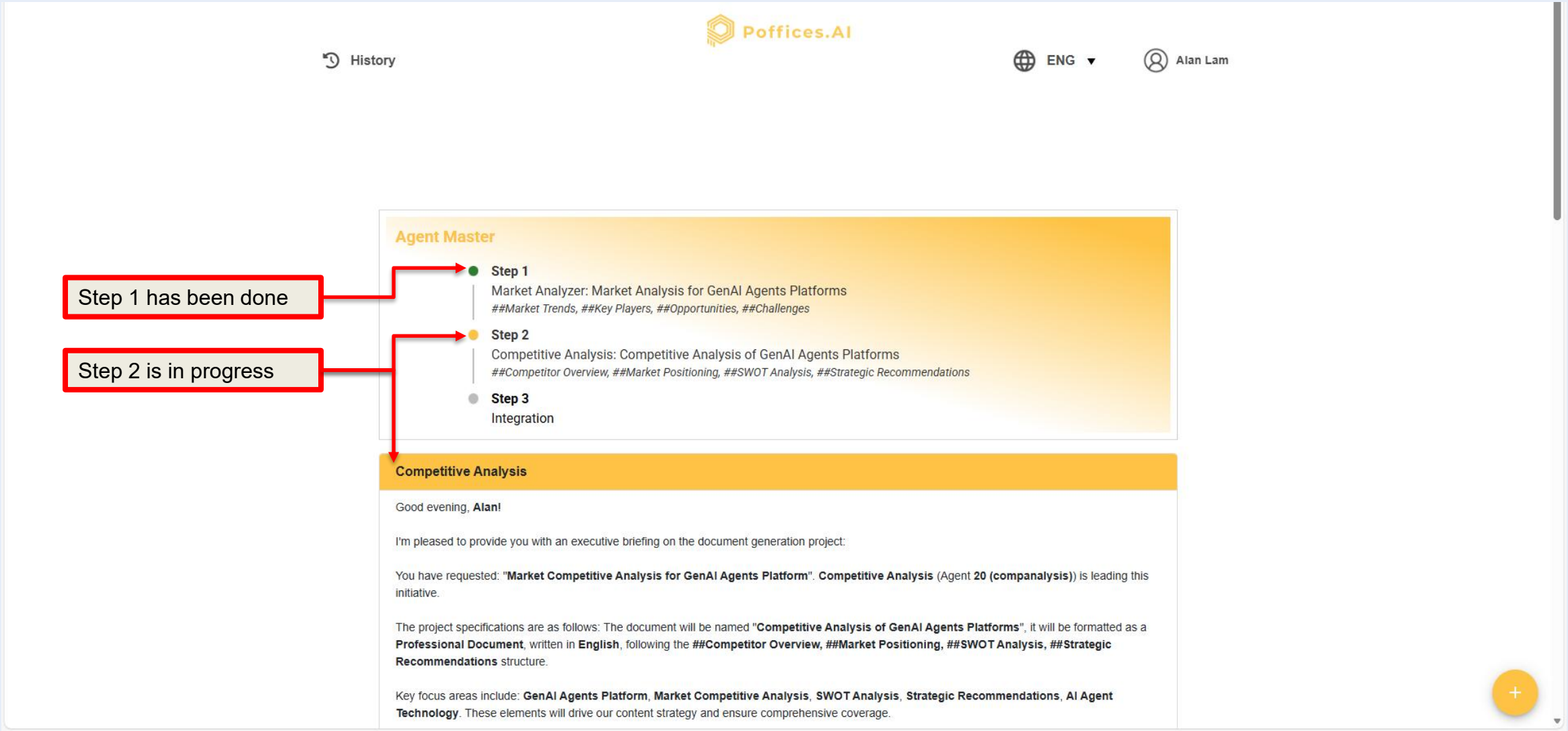
A key driver of this growth is the **scalability and adaptability** of AI agents. Unlike traditional AI tools, which often require extensive human oversight, GenAI agents can operate independently, learning from interactions to improve performance over time. This capability is especially valuable in industries like finance, healthcare, and e-commerce, where rapid response and precision are paramount. Additionally, the rise of **multimodal AI models**—capable of processing text, images, and audio—has expanded the potential applications of GenAI agents, further fueling market demand.

However, challenges such as **data privacy regulations** and **ethical concerns** remain significant barriers. For instance, the General Data Protection Regulation (GDPR) in the European Union imposes strict guidelines on data usage, which may limit the deployment of AI agents in certain regions. Despite these hurdles, the market continues to expand, with **Hong Kong** emerging as a hub for AI innovation due to its favorable business environment and investment in digital infrastructure.

GenAI Multi-Agents Platform



GenAI Multi-Agents Platform



GenAI Multi-Agents Platform

Generate the outcome from agent 2

Competitive Analysis of GenAI Agents Platforms

Competitor Overview

The competitive landscape for GenAI agents platforms is rapidly evolving, driven by advancements in artificial intelligence and the increasing demand for automation and efficiency across various industries. Key players in this market include established tech giants such as Google, Microsoft, and IBM, alongside emerging startups that are leveraging innovative approaches to deliver superior solutions. These competitors vary in their product offerings, pricing strategies, and market positioning, which can significantly impact their ability to attract and retain customers.

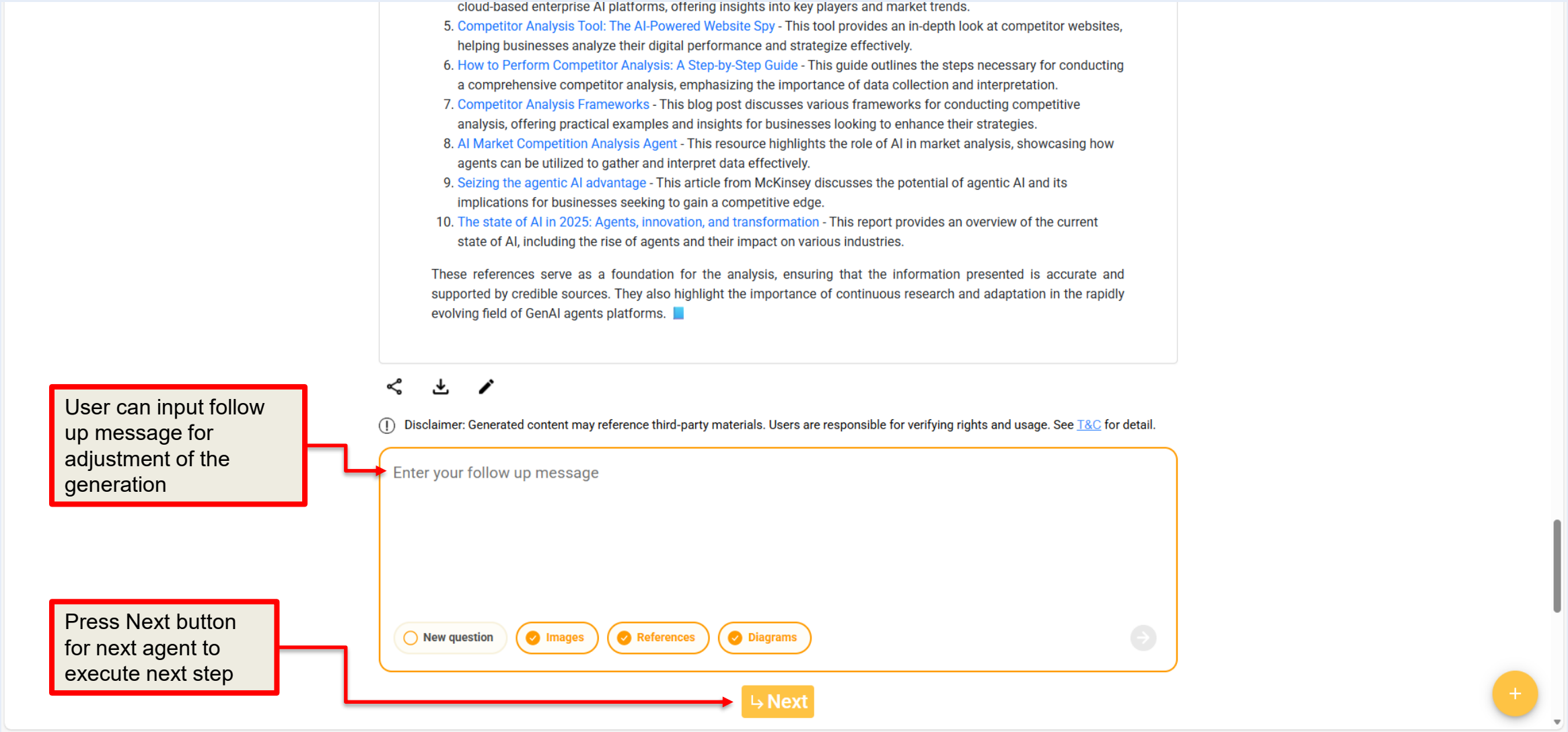
For instance, Google has made substantial strides with its AI initiatives, offering a range of tools like Google Cloud AI and Gemini, which are designed to cater to both developers and enterprises. This positions Google as a formidable competitor, given its extensive resources and brand recognition. On the other hand, Microsoft has been investing heavily in Azure AI and its AI agent capabilities, aiming to capture market share through integration with existing cloud services and a strong ecosystem of partners.

In addition to these major players, there are several niche startups that focus on specific applications of GenAI agents, such as customer service, data analysis, and content creation. These startups often differentiate themselves by offering tailored solutions that address unique pain points within particular industries. For example, ServiceNow's AI agents are specifically designed for enterprise environments, emphasizing workflow automation and integration with existing systems.

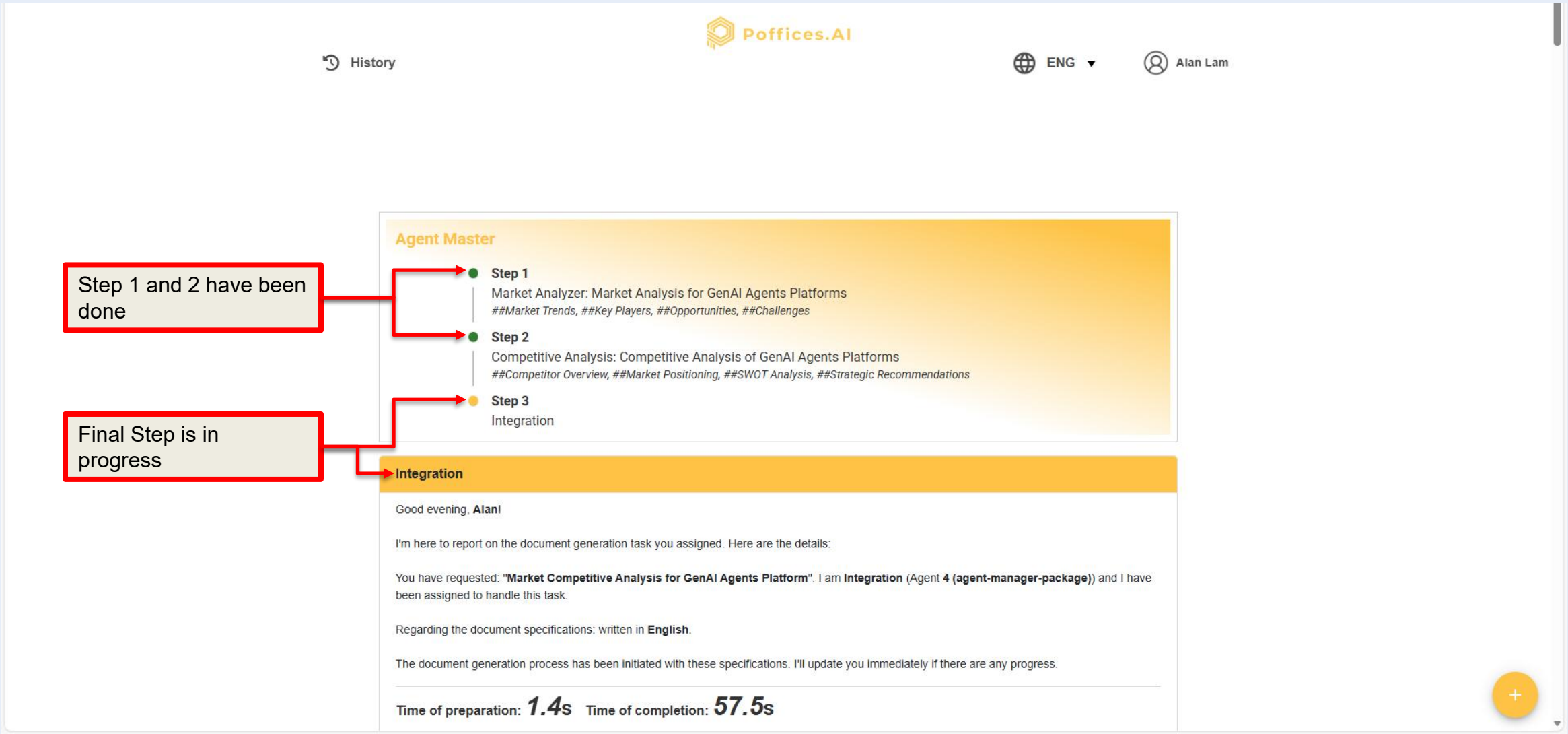
To provide a clearer picture, a table below outlines the key competitors and their respective strengths and weaknesses:

Competitor	Strengths	Weaknesses
Google	Extensive R&D, robust AI infrastructure, strong brand	High cost of entry, complex implementation
Microsoft	Comprehensive cloud solutions, integration capabilities	Limited customization options
IBM	Strong research background, industry-specific solutions	Slower adoption rate
Startups	Niche focus, innovative features, lower cost	Limited market reach, less brand awareness

GenAI Multi-Agents Platform



GenAI Multi-Agents Platform



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GenAI Multi-Agents Platform

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Comprehensive Market and Competitive Analysis of GenAI Agents Platforms

Introduction

The rapid evolution of artificial intelligence (AI) has positioned generative AI (GenAI) as a transformative force across industries, with AI agents emerging as a critical innovation within this landscape. This document provides a comprehensive analysis of the market and competitive dynamics for GenAI agents platforms, aligning with the ultimate goal of identifying key players, trends, opportunities, and challenges. The analysis integrates qualitative and quantitative research methods to offer actionable insights for stakeholders aiming to navigate the complexities of this rapidly growing sector.

The market for GenAI agents platforms is driven by their ability to automate complex workflows, enhance decision-making processes, and deliver personalized user experiences. Key trends include the scalability and adaptability of AI agents, which operate independently to improve performance over time, and the rise of multimodal AI models that process text, images, and audio. These advancements have expanded applications across industries such as finance, healthcare, and e-commerce. However, challenges like data privacy regulations, ethical concerns, and high implementation costs remain significant barriers. Hong Kong's emergence as an AI innovation hub, supported by its favorable business environment and digital infrastructure, highlights regional opportunities for growth.

The competitive landscape is shaped by a mix of established tech firms and emerging startups. Major players like Google DeepMind, Meta, and Microsoft Azure leverage their resources to develop robust frameworks, while niche startups such as Clarity AI and DeepSeek focus on vertical-specific applications. Pricing models vary, with subscription-based, cloud-based, and one-time licensing strategies influencing market positioning. Opportunities abound in sectors requiring real-time decision-making and personalized experiences, including enterprise automation and integration with legacy systems. Additionally, the expansion of AI agents into emerging markets and the development of open-source frameworks are accelerating adoption. Despite these prospects, challenges such as data security, technological maturity, and economic constraints necessitate strategic investments in innovation, regulatory alignment, and cost-effective solutions.

This document synthesizes market trends, competitive strategies, and strategic recommendations to guide stakeholders in leveraging GenAI agents platforms effectively. By addressing both opportunities and challenges, it aims to provide a holistic view of the market's trajectory and its implications for future growth.

Market Analysis for GenAI Agents Platforms

GenAI Multi-Agents Platform

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Conclusion

The GenAI agents platform market stands at a pivotal juncture, characterized by rapid technological advancements, evolving consumer demands, and dynamic regulatory environments. While the global AI market is projected to reach HKD 4.8 trillion by 2033, the successful adoption of GenAI agents hinges on overcoming critical challenges such as data security, technological limitations, and economic barriers. Stakeholders must adopt a strategic approach that balances innovation with compliance, ensuring that their offerings align with both current market needs and future trends.

The competitive landscape is increasingly fragmented, with established tech giants and agile startups vying for dominance. Companies like Google, Microsoft, and IBM continue to lead through their extensive R&D capabilities and integration with existing ecosystems, while niche startups capitalize on specialized applications and lower entry costs. However, the market's complexity demands a nuanced understanding of pricing models, user experience, and customization options. Subscription-based models offer sustained revenue streams, whereas freemium strategies enable broader user acquisition. The ability to seamlessly integrate with cloud services and APIs further enhances market positioning, as businesses prioritize interoperability and scalability.

Strategic recommendations emphasize the importance of user education, enhanced UX design, and collaborative partnerships. Investing in training programs can mitigate resistance to adoption, while intuitive interfaces and responsive support foster user engagement. Leveraging alliances with industry leaders and innovators can drive standardization and ethical practices, ensuring that GenAI platforms meet regulatory requirements and societal expectations. Continuous innovation remains vital to maintain relevance, particularly as technologies like blockchain and IoT converge with AI to create new possibilities.

Hong Kong's role as an AI innovation hub underscores the potential for regional leadership in this field. Its robust digital infrastructure, investment climate, and supportive policies position it to attract talent and capital, further fueling the growth of GenAI agents platforms. However, global competition necessitates proactive measures to address data privacy concerns and ensure cross-border compliance. As the market matures, the emphasis on ethical AI and sustainable practices will become increasingly critical, shaping the long-term viability of GenAI solutions.

In conclusion, the GenAI agents platform market offers immense potential but requires careful navigation of technical, economic, and regulatory challenges. By prioritizing innovation, collaboration, and strategic alignment with industry needs, stakeholders can unlock the full value of GenAI agents. This will not only drive efficiency and personalization but also establish a resilient foundation for long-term success in this transformative sector.

Practical Exercise

1. Keep this note confidential. You must NOT share to others or release to public.
2. Login https://poffices.ai/
3. Using Agent Master to test multi-agents workflow by select suitable agent one by one in agent master to handle your task.
4. Compare the results of multi-agents workflow and single agent outcome.

(2) Enter your input with new prompt, then click generation.

(1) Click Agent Master to choose multi-agents with purpose sequence

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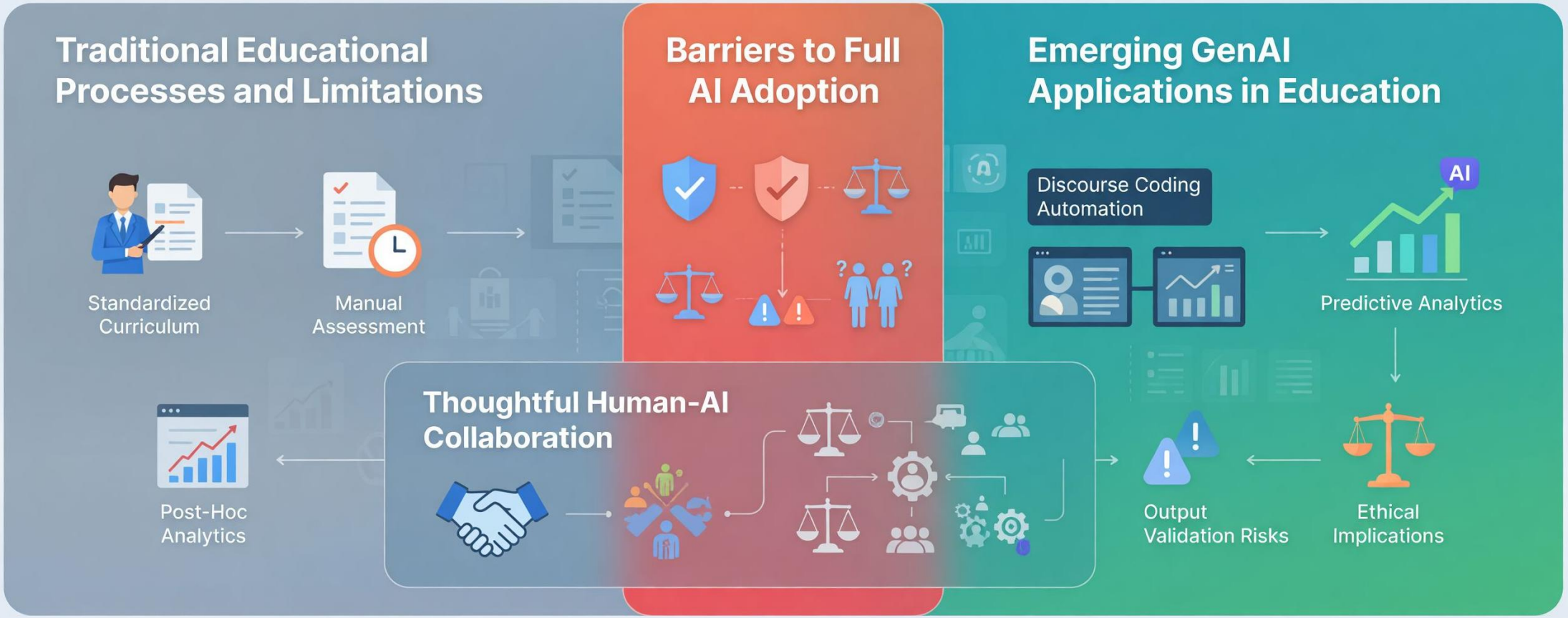
Mapping Education Workflows for GenAI Integration

Ir Prof Alan Lam, JP,

Overview of Education Workflows

Analysis of Current Educational Processes



Identification of Integration Points

Challenges in Integration

Output Reliability and Validation Risks

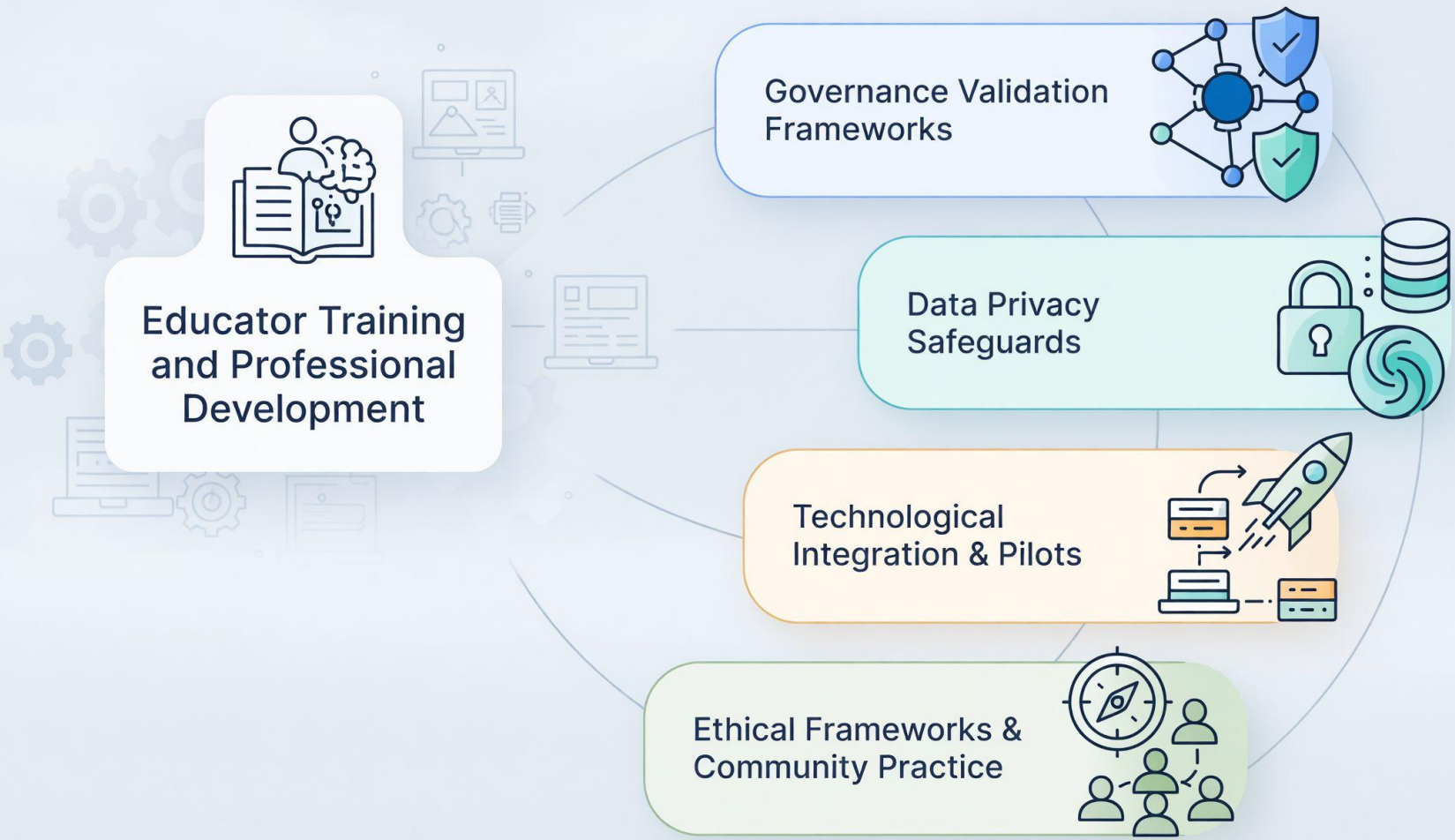
Educator Readiness and Adoption Challenges

Privacy and Ethical Concerns

Technological Infrastructure and Compatibility

Curricular Coherence and Assessment Validity

Strategies to Overcome Integration Barriers



Practical Examples of Workflow Mapping

Practical Exercise

1. Keep this note confidential. You must NOT share to others or release to public.
2. Login https://poffices.ai/
3. Based on the above concept to design an educational workflow that involves multiple agents
4. Using Agent Wizard to create the proposed agents
5. Test the newly created agents and check the outcomes by Creator Studio Generation History function.

(2) Enter your input with new prompt, then click generation.

(1) Click Agent Master to choose newly created agents

End of Presentation
Thank You