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# **CAPSTONE PROJECT**

## **TRAVEL PLANNER AGENT**

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# OUTLINE

- **Problem Statement**
- **Proposed System/Solution**
- **System Development Approach (Technology Used)**
- **Result (Output Image)**
- **Conclusion**
- **Future Scope**
- **References**

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# PROBLEM STATEMENT

- Planning a trip involves multiple complex tasks including researching destinations, checking weather conditions, budgeting, booking transport and accommodations, and building itineraries. This process is time-consuming and often overwhelming for users. There is a need for an AI-powered assistant that can simplify and personalize the travel planning experience.

# PROPOSED SOLUTION

The proposed system aims to address the challenge of planning trips efficiently by developing an AI-powered **Travel Planner Agent**. The agent is designed to simplify travel planning by offering real-time suggestions, managing logistics, and tailoring travel plans based on individual preferences. It leverages IBM Cloud Lite services and IBM Granite large language models to enable intelligent and context-aware assistance. The solution will consist of the following key components:

- **User Interaction & Intent Understanding:** The agent interacts with users via natural language to gather inputs like destination, budget, dates, and travel goals.
- **Real-Time Data Integration:** Integrates with APIs to fetch live data such as weather updates, transport options, and accommodation availability.
- **Itinerary & Plan Generation:** Builds customized travel plans including recommended destinations, activities, and route suggestions.
- **Smart Booking Management:** Assists in booking accommodations and transportation (optional API-based implementation).
- **Deployment on IBM Cloud:** Built using watsonx.ai Agent Builder and deployed on IBM Cloud Lite, ensuring scalability and ease of access.
- **Personalization & Adaptation:** Continuously refines suggestions based on user feedback and interaction history.

# SYSTEM APPROACH

The system approach outlines the tools, architecture, and methodology used to build and deploy the Travel Planner Agent.

## 1. System Requirements

- IBM Cloud account (Lite plan)
- Access to watsonx.ai for building and training AI models
- IBM Cloud Object Storage to store user data and model assets
- IBM Cloud Code Engine or Cloud Functions for runtime deployment
- Integrated services: Maps API, Weather API, and Booking services API (optional)

## 2. Technologies Used

- AI/ML Platform: watsonx.ai (for building custom recommendation and planning models)
- Runtime: IBM Cloud Code Engine or Function as a Service (FaaS) for backend logic
- Storage: IBM Cloud Object Storage for itinerary data, user preferences, and model inputs

## 3. Libraries & Tools

- IBM Cloud CLI & SDKs for deployment and integration
- REST APIs for third-party services

# RESULT

- The screenshot displays the dashboard of the "Travel Planner Agent" project on IBM watsonx.ai. It confirms that the project has been successfully created, showing key sections like Assets, Deployments, and Jobs. Resource usage, documentation tools, and collaboration options are also available for building and managing the AI travel assistant.

The screenshot shows the IBM watsonx.ai dashboard for the "Travel Planner Agent" project. The interface includes a top navigation bar with the IBM watsonx logo, an "Upgrade" button, and user account information. Below the navigation bar, there's a breadcrumb trail "Projects / Travel Planner Agent" and a set of tabs: "Overview" (selected), "Assets", "Deployments", "Jobs", and "Manage".

The main content area is titled "Start working" and features four recommended actions:

- Add users as collaborators** (with a user icon and a right arrow)
- Add data to work with** (with a data icon and a right arrow)
- Chat and build prompts with foundation models** (with a chat icon and a right arrow)
- Tune a foundation model with labeled data** (with a tuning icon and a right arrow)

Below these actions, there's a "View all" link and a "Collapse" button. The dashboard is divided into three main sections:

- Jump back in**: Shows a list of recent projects. The first entry is "Travel Planner Agent" with a timestamp "2 hours ago by you" and a "View all" link.
- Resource usage**: Displays usage metrics for the current month in this project:
  - 0 CUH
  - 24292 Tokens
  - 0 Hosting hours
  - 0 Pages
- Your documentation**: Includes a "New!" badge and a section titled "Get started with your documentation" with the text "You can create and manage documents about work that you do in this project." and a button "Open Documentation editor" with a right arrow.

At the bottom, there's a "Project history" section with a refresh icon, showing a notification: "Project export complete" with the message "Travel Planner Agent was exported successfully." and the timestamp "Today at 9:13 AM".

The URL at the bottom of the screenshot is: <https://dataplatform.cloud.ibm.com/projects/4b321cf9-765e-4e94-a399-e3788ee35f12?...>

# RESULT

- The screenshot shows the IBM watsonx.ai interface under the "Travel Planner Agent" project. The Assets tab displays a single agent named Travel Planner Agent, indicating that the agent has been successfully created and saved in the project workspace for further AI development.

The screenshot displays the IBM watsonx.ai interface for the "Travel Planner Agent" project. The top navigation bar includes the IBM watsonx logo, an "Upgrade" button, a help icon, a notification bell, the user account "Abhinava Ghosh's Account", the location "Dallas", and a profile icon "AG". The breadcrumb navigation shows "Projects / Travel Planner Agent". Below this, a tabbed interface has "Overview", "Assets" (selected), "Deployments", "Jobs", and "Manage". The "Assets" tab contains a search bar "Find assets" and buttons for "Import assets" and "New asset". On the left, a sidebar indicates "1 assets" and lists "All assets" under "Asset types", with a sub-item "Agents" marked with a "1". The main content area, titled "All assets", features a table with the following data:

Name	Last modified
Travel Planner Agent Agent	2 hours ago Modified by you

# RESULT

- The Travel Planner Agent project uses IBM watsonx.ai with IBM Cloud runtime and storage to create a smart assistant that helps users plan trips. It provides personalized destination suggestions, real-time recommendations, and local insights. The system integrates web tools to ensure an interactive and efficient travel planning experience. The agent is perfectly responding to the user queries.

The screenshot displays the IBM watsonx AI interface for the 'Travel Planner Agent' project. The interface is divided into two main sections: 'Build' and 'Agent preview'.

**Build Section:**

- Setup:** A dropdown menu showing the current configuration.
- Configuration:**
  - Framework:** LangGraph
  - Architecture:** ReAct
- Instructions:** A text area containing the prompt: "You are a helpful assistant that uses tools to answer questions in detail. When greeted, say 'Hi, I am Travel Planner Agent. How can I help you?'".
- Knowledge:** A section for adding knowledge sources.
- Tools:** A section for adding tools. It includes buttons for "Add a tool" and "Create custom tool".
- Added tools (5):**
  - Google search:** Retrieve information from the internet with the Google search engine.
  - DuckDuckGo search:** Retrieve information from the internet with the DuckDuckGo search engine.
  - Wikipedia search:** Retrieve information from Wikipedia articles.
  - Webcrawler:** Retrieve information from a website.
  - Weather:** Retrieve the weather of a city.

**Agent preview Section:**

This section shows the agent's responses to user queries. The conversation history is as follows:

- User:** "Hi"
- Travel Planner Agent:** "Hi, I am Travel Planner Agent. How can I help you?"
- User:** "Can you suggest me top 3 places in west bengal"
- Travel Planner Agent:** "Based on the search results, the top 3 places in West Bengal are:  
1. Sunderbans National Park  
2. Victoria Memorial Hall  
3. Dakshineswar Kali Temple  
These places are known for their historical and cultural significance, and are popular tourist destinations in West Bengal."
- User:** "out of these 3 wich one is most popular for travel"
- Travel Planner Agent:** "The most popular tourist destination in West Bengal among Sunderbans National Park, Victoria Memorial Hall, and Dakshineswar Kali Temple is Sunderbans National Park."
- User:** "can you elaborate"
- Travel Planner Agent:** "The Sunderbans National Park is a popular tourist destination in West Bengal, known for its unique mangrove forest and diverse wildlife, including the Royal Bengal Tiger. It is located in the Sunderbans delta, where the Ganges, Brahmaputra, and Meghna rivers meet, and is the largest estuarine mangrove forest in the world. The park is a UNESCO World Heritage Site and is home to a wide range of flora and fauna, including crocodiles, dolphins, and birds. Visitors can take a boat tour or trek through the forest to spot wildlife and enjoy the scenic beauty of the park. The park is also known for its cultural significance, with several local villages and communities living in harmony with the forest and its wildlife. Overall, the Sunderbans National Park is a must-visit destination for nature lovers and those interested in exploring the unique culture and biodiversity of West Bengal."

The interface also includes a top navigation bar with options like 'Upgrade', 'Abhinava Ghosh's Account', 'Dallas', and 'Deploy'. A bottom input field is labeled 'Type something...'.



# CONCLUSION

- The Travel Planner Agent successfully simplifies and personalizes trip planning using AI-powered recommendations through IBM watsonx.ai. By understanding user preferences and integrating real-time data like weather and local guides, it creates dynamic, tailored travel itineraries. Deployed on IBM Cloud with scalable runtime and object storage, the agent enhances user experience by making travel planning efficient, smart, and enjoyable. This project demonstrates the potential of AI in transforming traditional planning into a seamless, interactive process.

# FUTURE SCOPE

- The Travel Planner Agent can be enhanced with voice assistant integration for hands-free interaction, advanced NLP for natural conversation, and AI-driven cost optimization. Future upgrades may include multilingual support, integration with airline/train APIs for dynamic bookings, personalized activity suggestions via user history, and collaboration with travel agencies. Incorporating AR/VR previews of destinations and blockchain-based secure booking systems can further elevate the user experience.

# REFERENCES

- IBM watsonx.ai Documentation – <https://www.ibm.com/cloud/watsonx-ai>
- IBM Cloud Runtime Environments – <https://cloud.ibm.com/docs>
- IBM Cloud Object Storage – <https://www.ibm.com/cloud/object-storage>
- IBM Developer: AI-Powered Travel Assistant – <https://developer.ibm.com/>
- Scikit-learn: Machine Learning in Python – <https://scikit-learn.org/>
- Python Official Documentation – <https://docs.python.org/3/>
- OpenWeatherMap API (for real-time weather data) – <https://openweathermap.org/api>
- Google Maps Platform – <https://developers.google.com/maps>

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## GITHUB LINK

- [https://github.com/Abhinava1309/Travel\\_Planner\\_Agent-AICTE\\_Project-/tree/main](https://github.com/Abhinava1309/Travel_Planner_Agent-AICTE_Project-/tree/main)

# IBM CERTIFICATIONS

- Screenshot/ credly certificate( getting started with AI)



# IBM CERTIFICATIONS

- Screenshot/ credly certificate( Journey to Cloud)



# IBM CERTIFICATIONS

- Screenshot/ credly certificate( RAG Lab)





**THANK YOU**