AGENTIC AI PROJECT

RECIPE PREPARATION AGENT

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OUTLINE

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- Proposed System/Solution
- System Development Approach
- Algorithm & Deployment
- Result (Output Image)
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PROBLEM STATEMENT

A Recipe Preparation Agent helps users cook meals using only the ingredients they have on hand. By inputting available groceries, users receive tailored recipe suggestions using a RAG-based AI system. The agent retrieves relevant recipes and generates step-by-step instructions adapted to ingredient limitations. It offers substitutions, cooking tips, and dietary adjustments based on user preferences or restrictions. Designed to reduce food waste and save time, it turns pantry items into practical meal solutions. This AI assistant makes everyday cooking smarter, simpler, and more sustainable. .

PROPOSED SOLUTION

- The proposed system is a **Recipe Preparation Agent** built with IBM Watsonx Agentic AI. It allows users to input available ingredients and dietary preferences, and in return, suggests:
- Recipe ideas
- Substitutions
- Cooking steps
- Dietary tips

  This system improves sustainability, saves time, and empowers smarter home cooking.

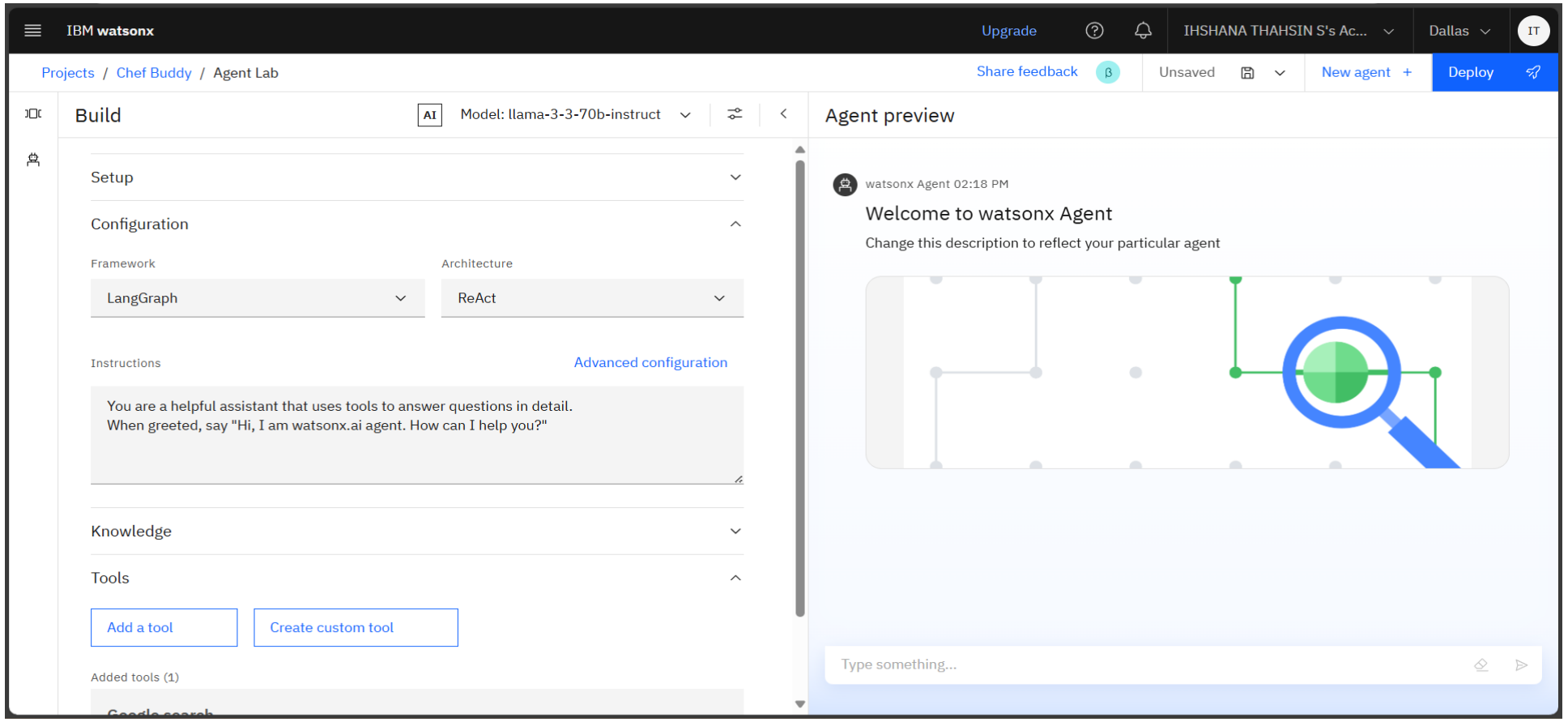
SYSTEM APPROACH

- IBM Watsonx Agent Lab (Agentic AI framework)
- LangGraph + ReAct architecture
- Foundation model: ibm/granite-13b-instruct-v2
- No external dataset used — all logic handled by prompt instructions
- Tested with both .json inputs and live chat UI preview

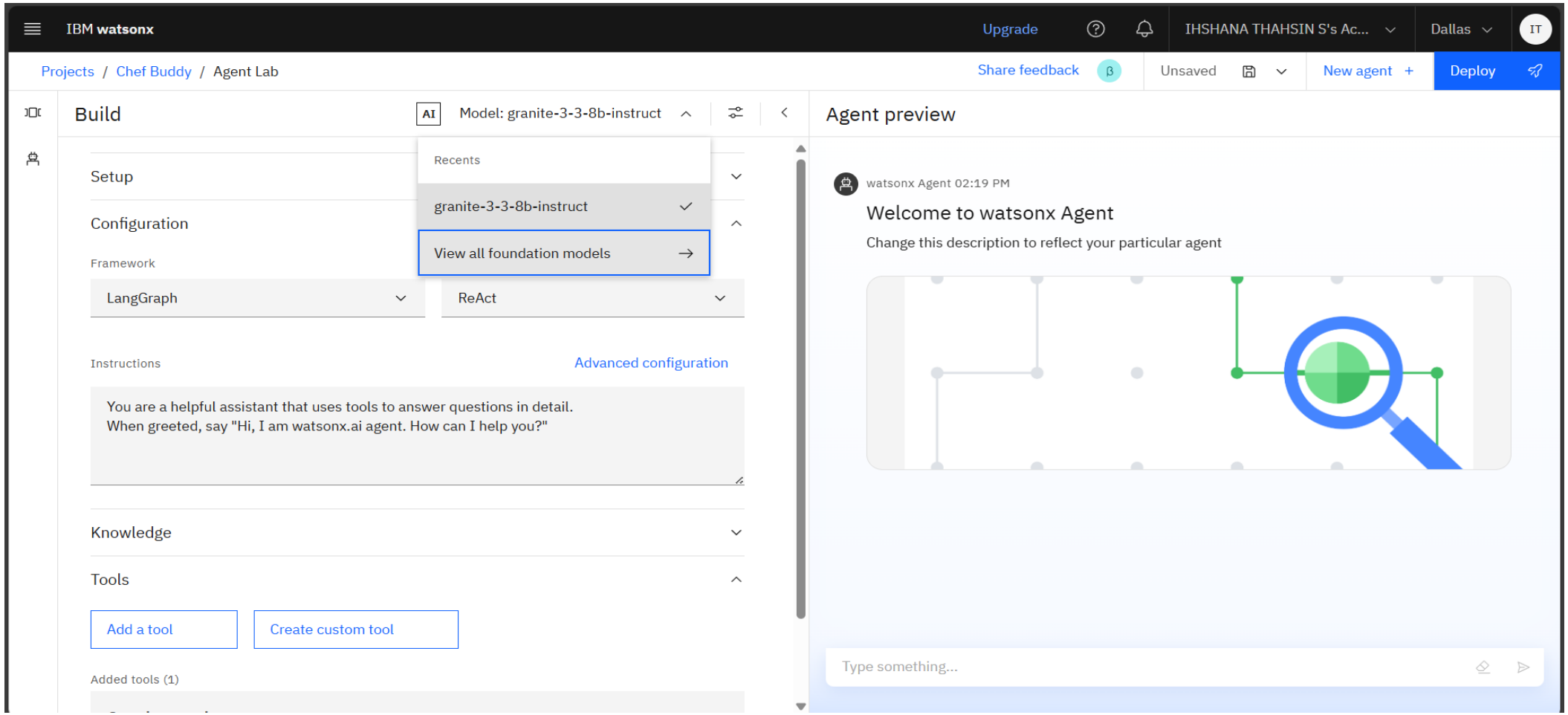
ALGORITHM & DEPLOYMENT

- **Algorithm Selection:**
- The agent uses IBM Watsonx's Granite large language model with the LangGraph framework and ReAct architecture to enable tool-aware reasoning and dynamic conversation handling.
- **Data Input:**
- The input is user-provided natural language text in TEXT format, including ingredients and dietary preferences.
- **INSTRUCTION DESIGN:**
- Instead of training on datasets, the agent uses a prompt defining its role, task, rules, and tone to guide its behavior.
- **Prediction Process:**
- The prompt and user input are processed in real time by the Granite LLM, which generates recipe suggestions, substitutions, and cooking instructions.

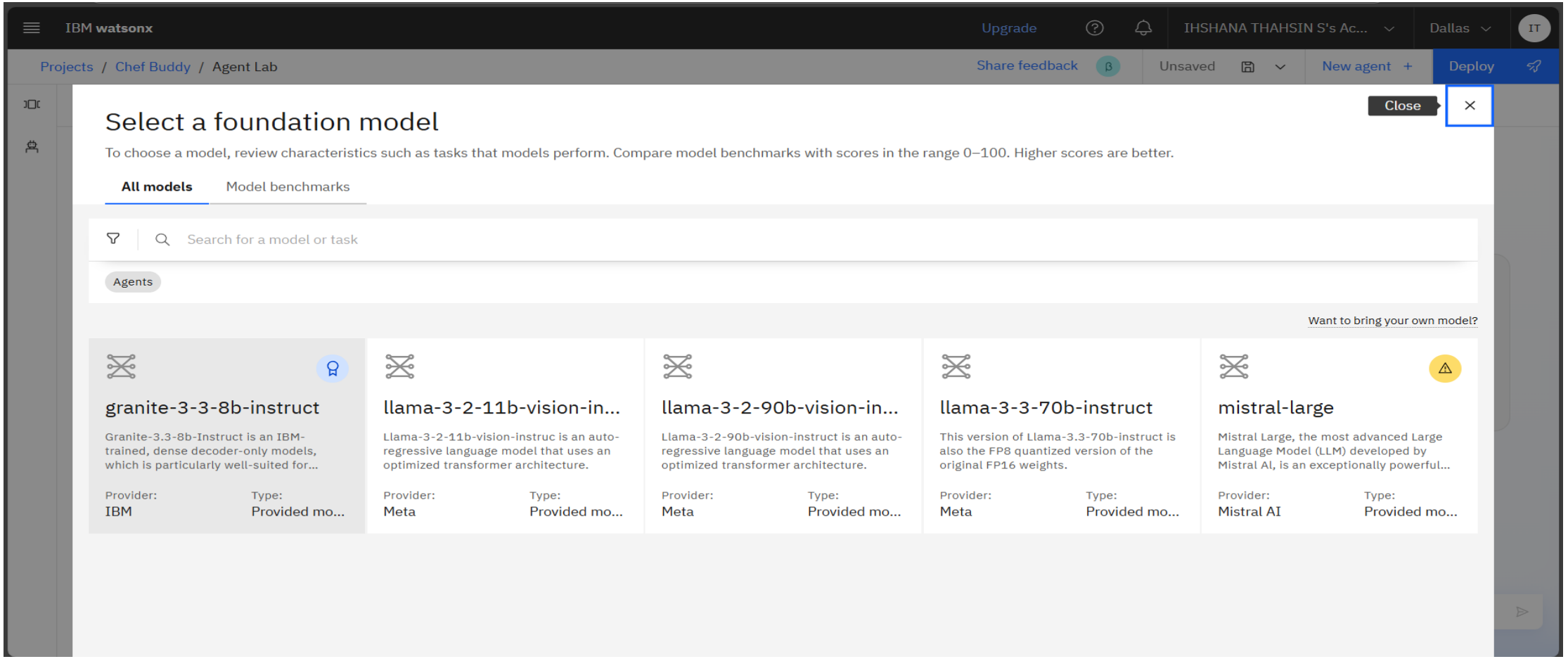
STEP 1: AGENT SETUP WITH LANGGRAPH + REACT



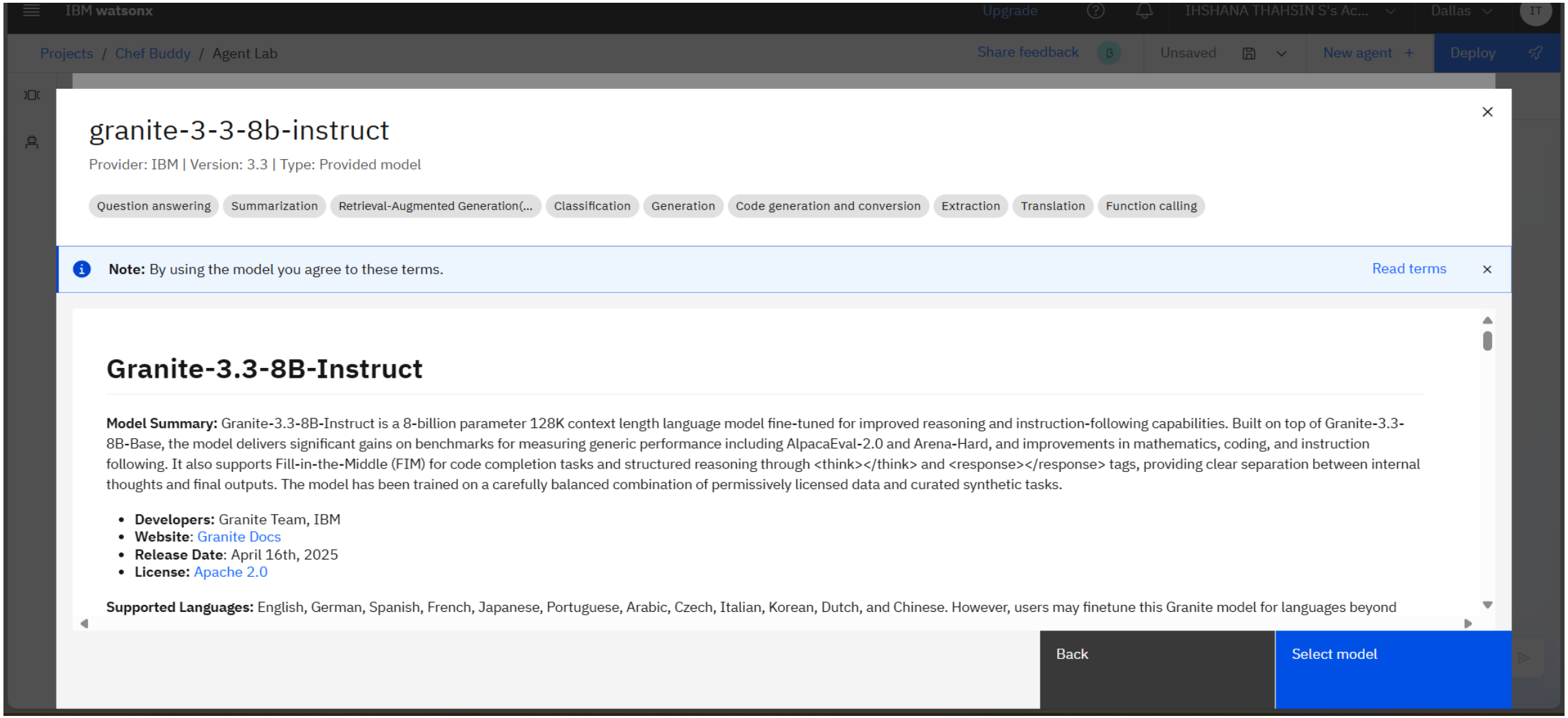
STEP 2: MODEL SELECTION (GRANITE 3-3-8B INSTRUCT



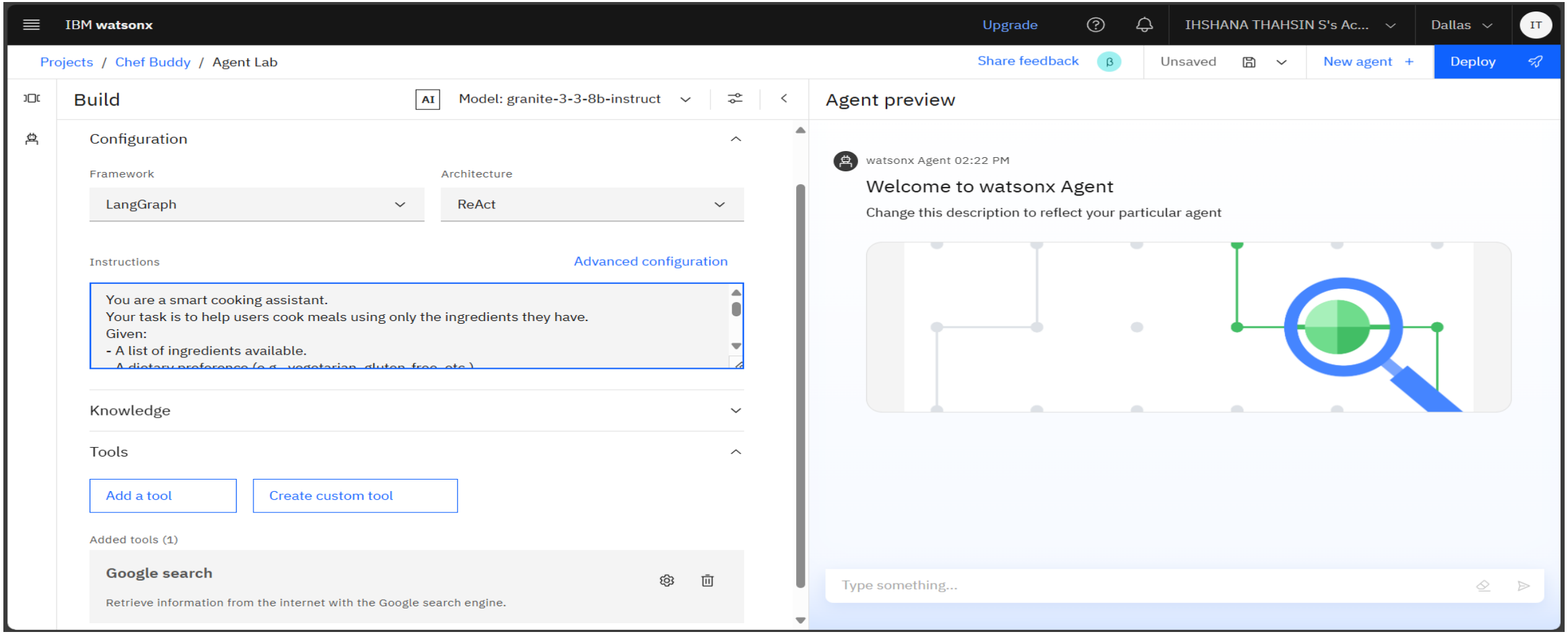
STEP 3: INSTRUCTION PROMPT DEFINED



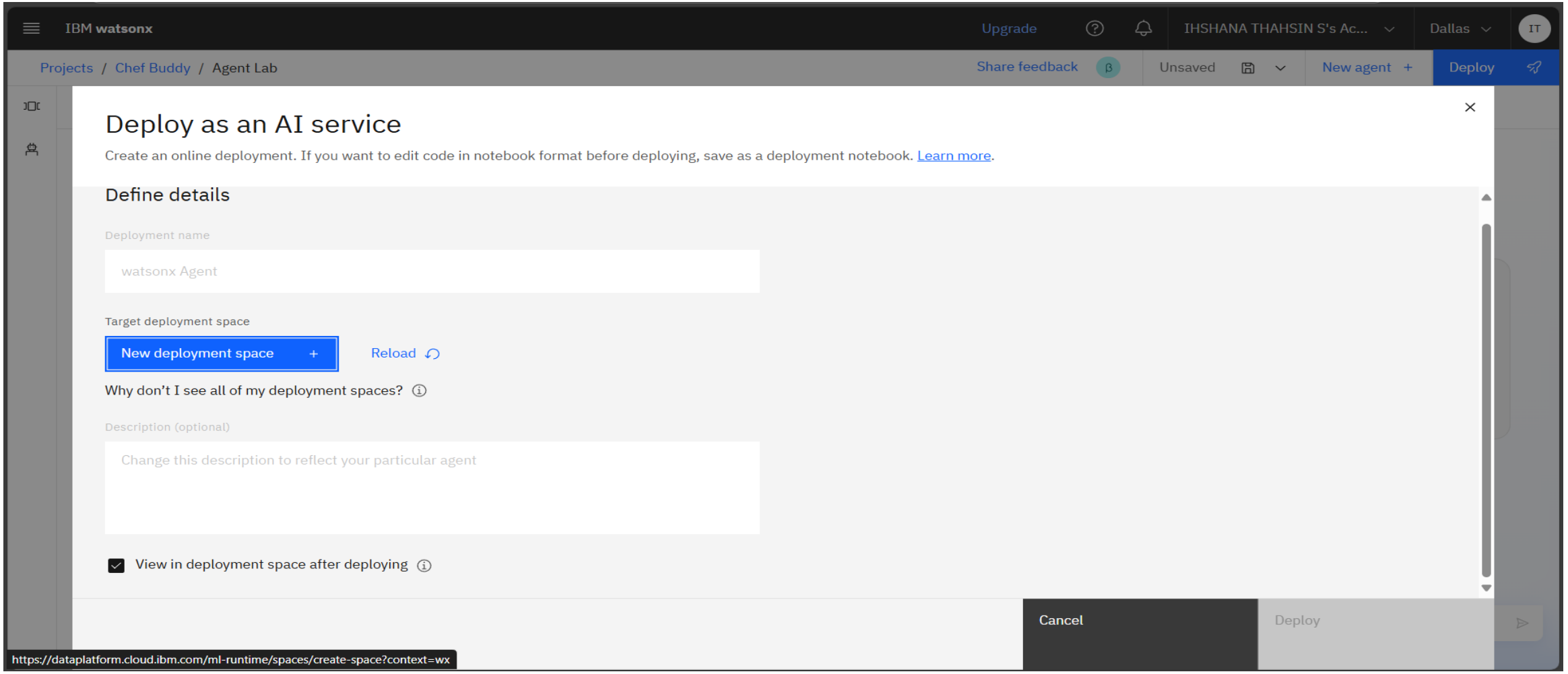
STEP 4: ADDING GOOGLE SEARCH TOOL



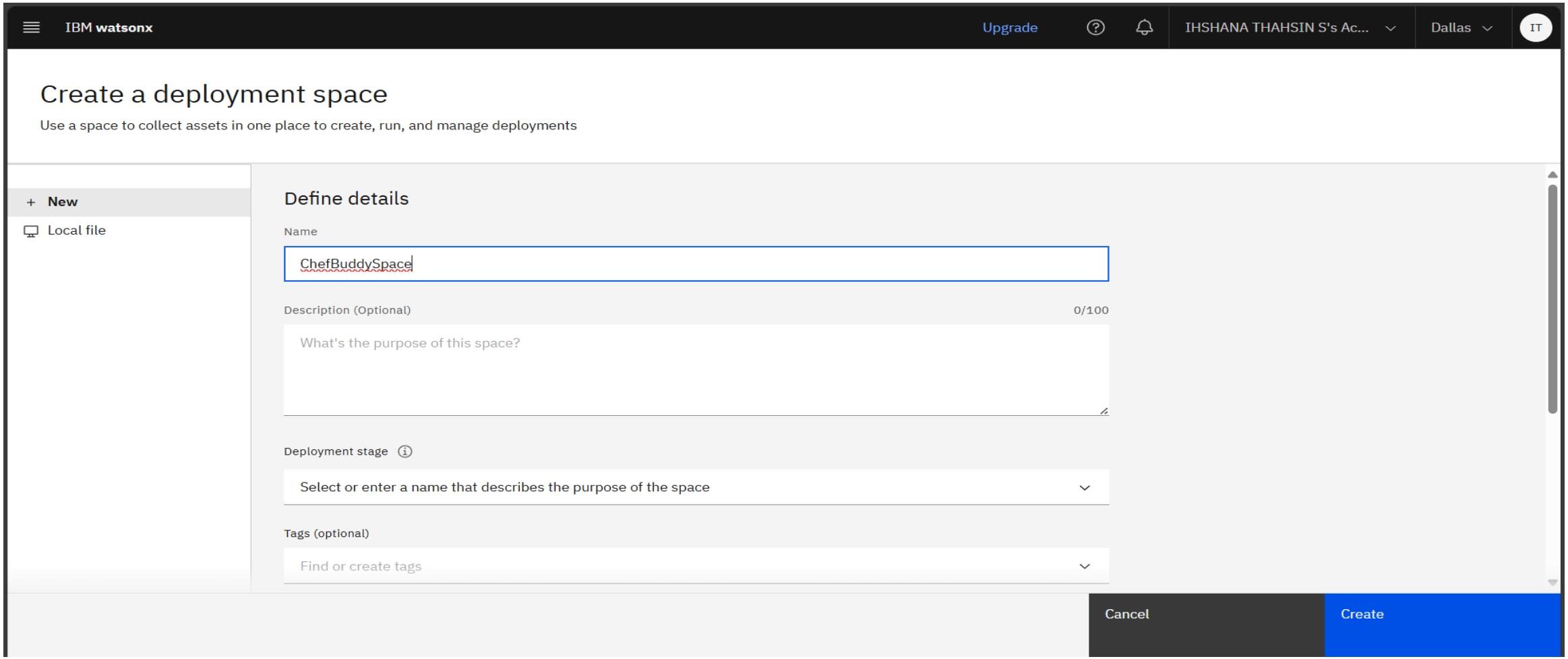
STEP 5: CREATE DEPLOYMENT SPACE



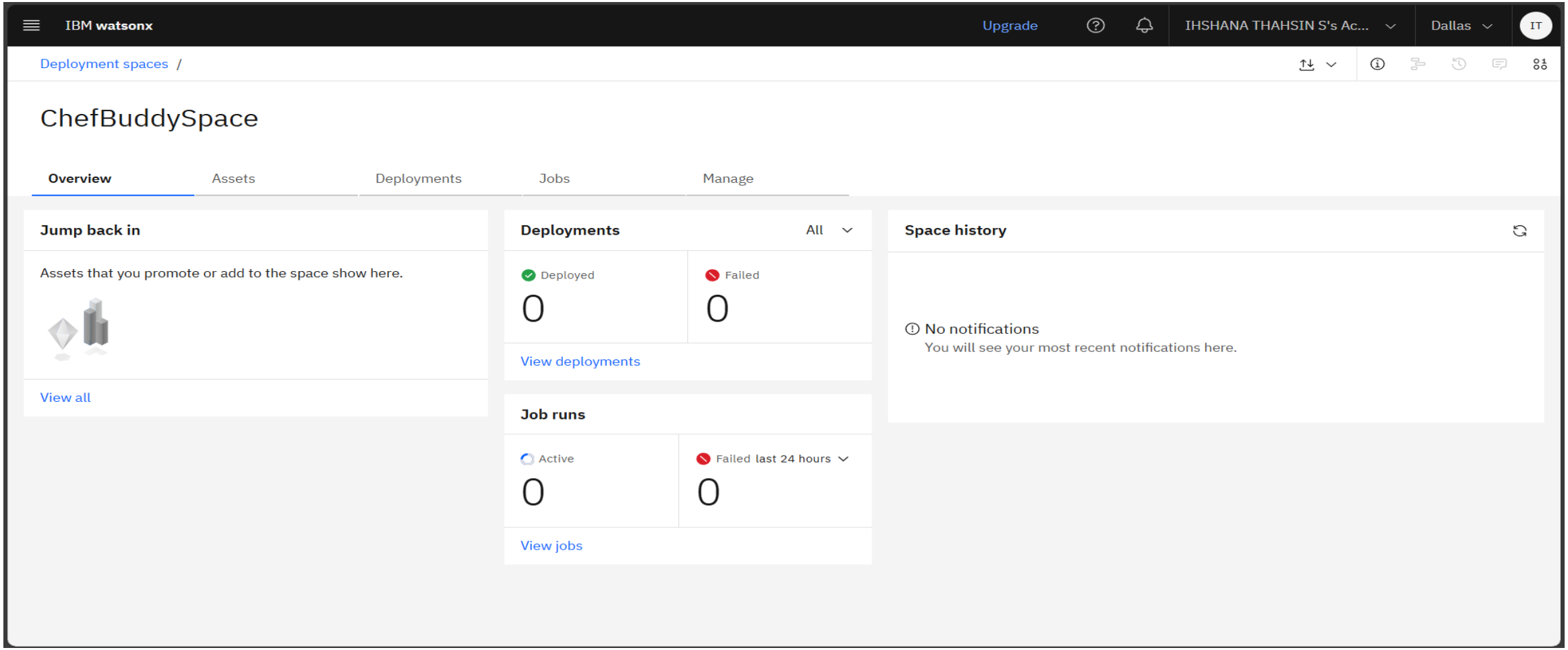
STEP 6: NAMING THE SPACE (CHEFBUDDYSPACE



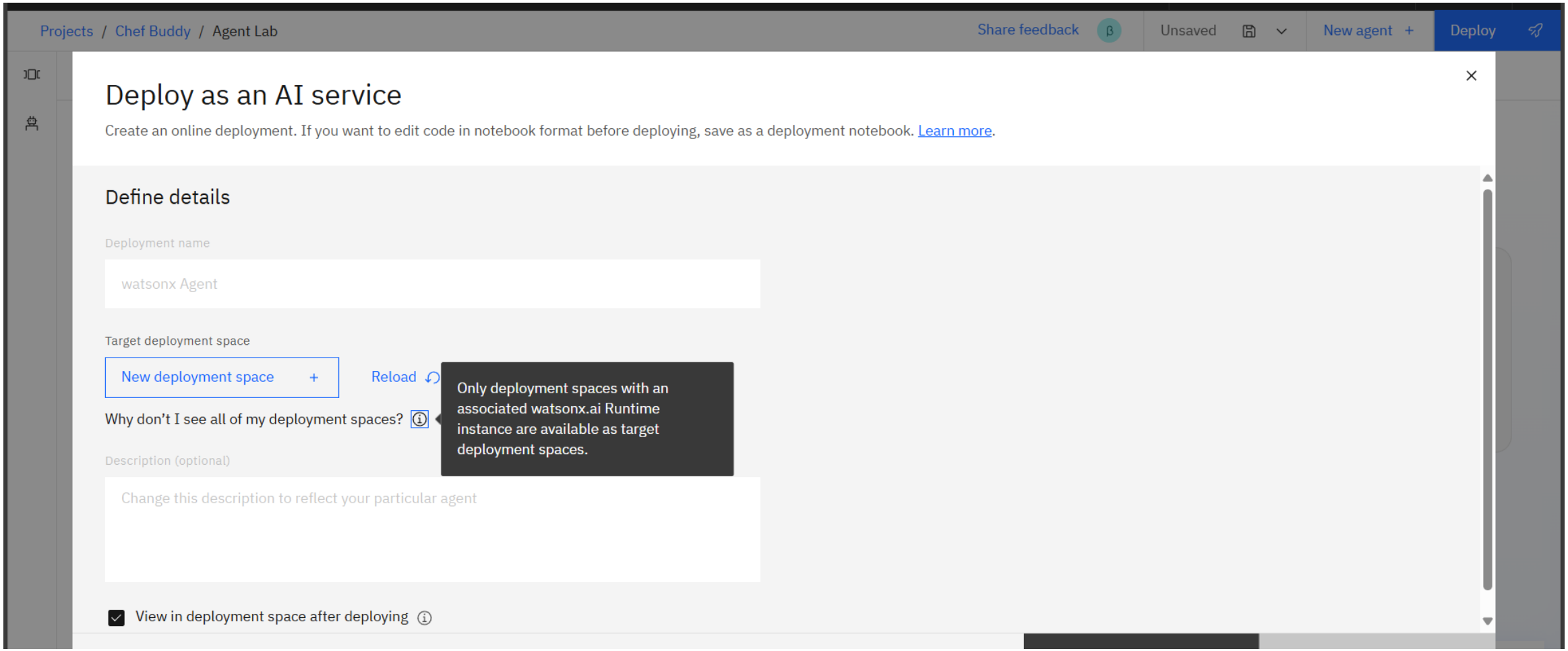
STEP 7: SPACE CREATED AND READY



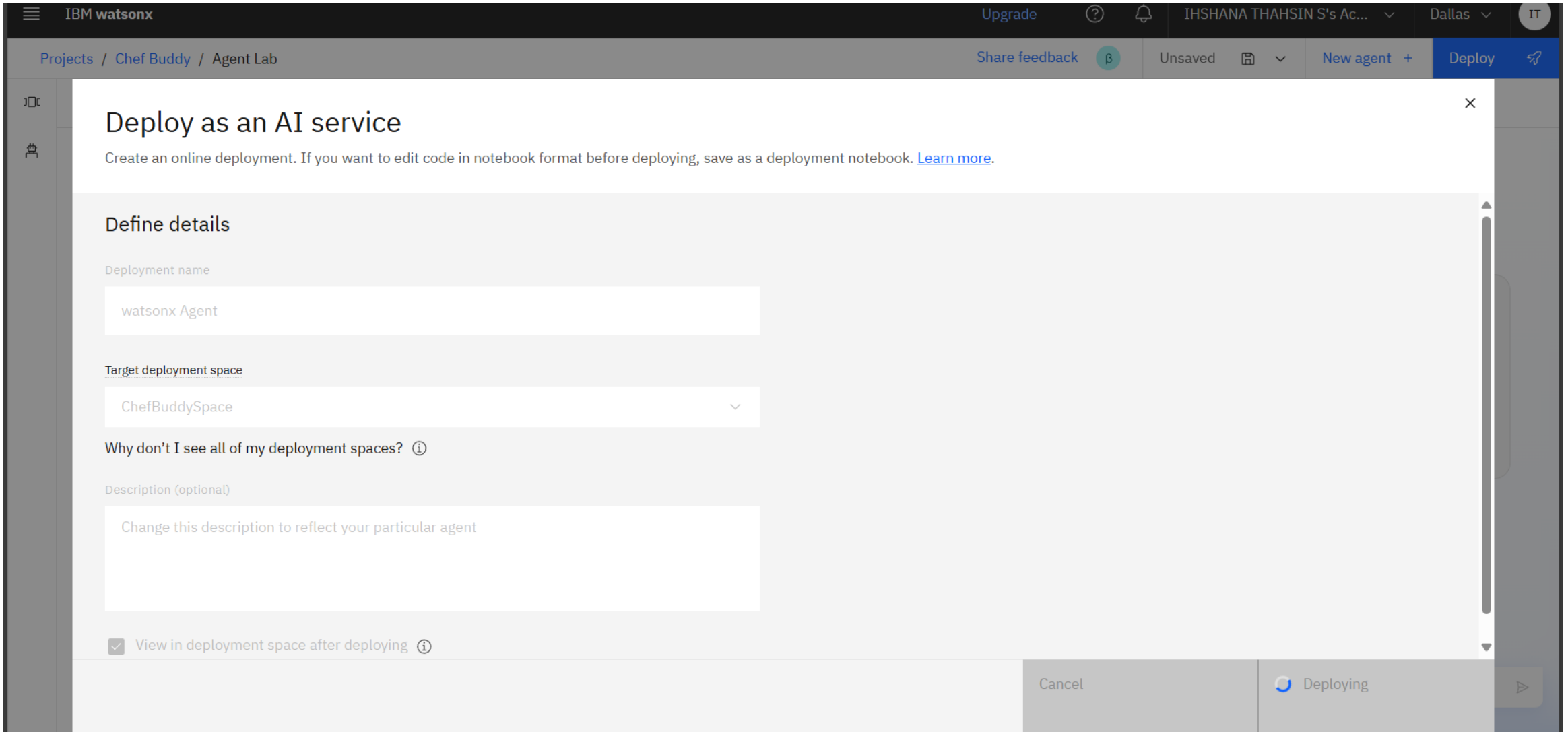
STEP 8: DEPLOYMENT CONFIGURATION STARTED



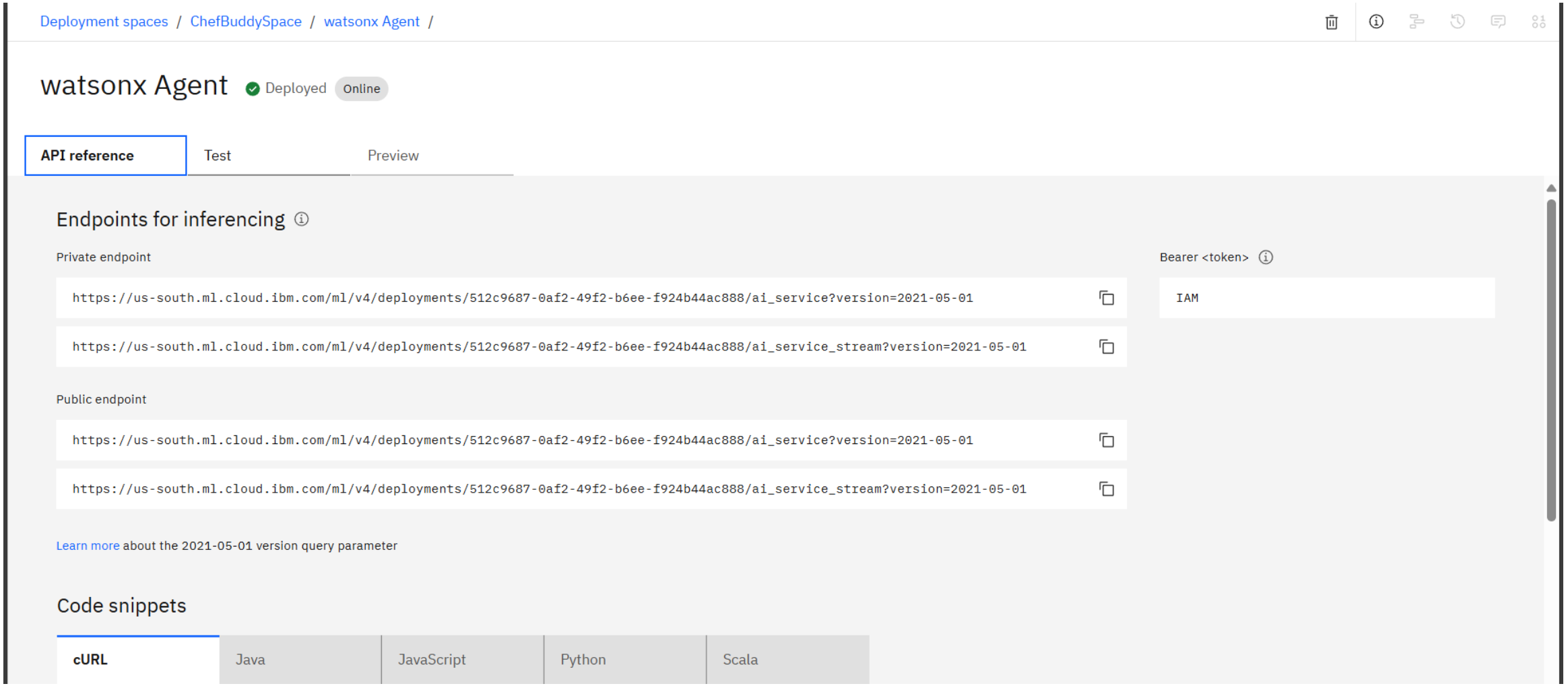
STEP 9: AI DEPLOYMENT SCREEN



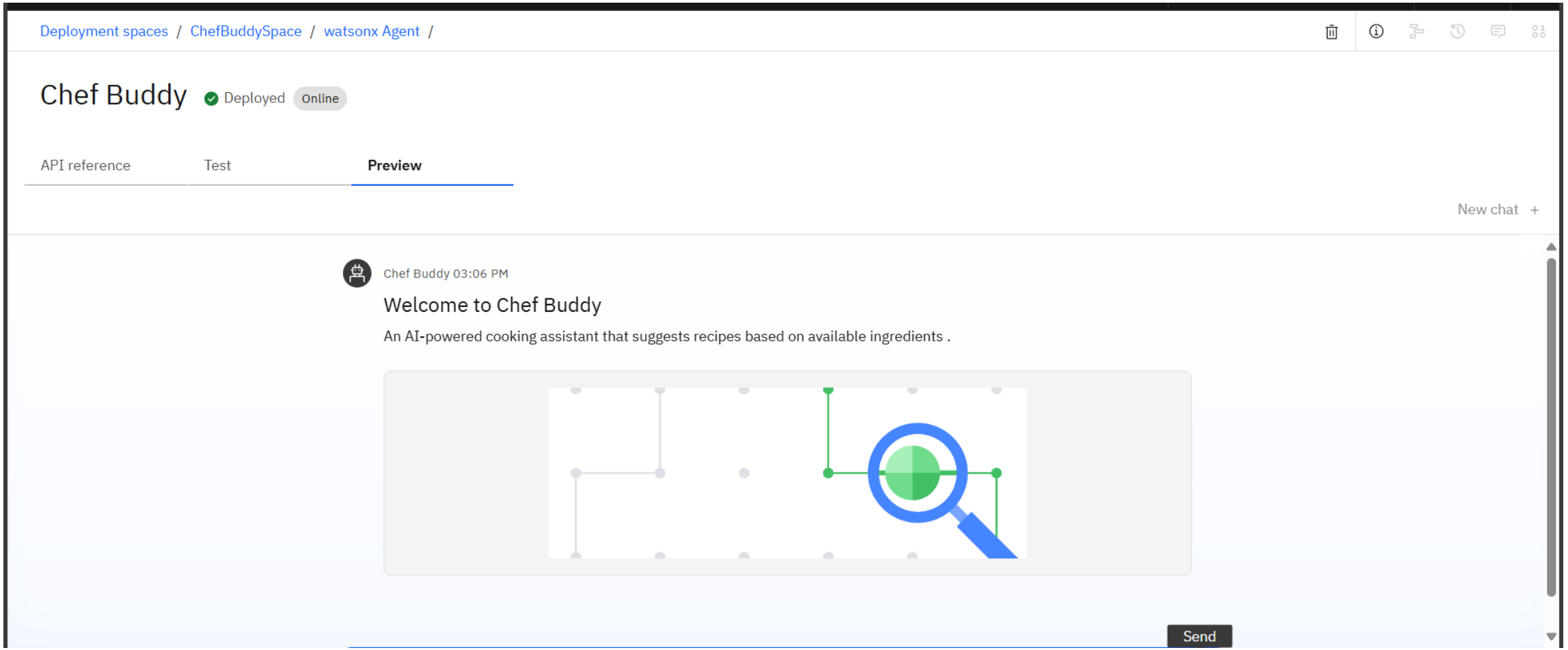
STEP 10: SELECT TARGET DEPLOYMENT SPACE



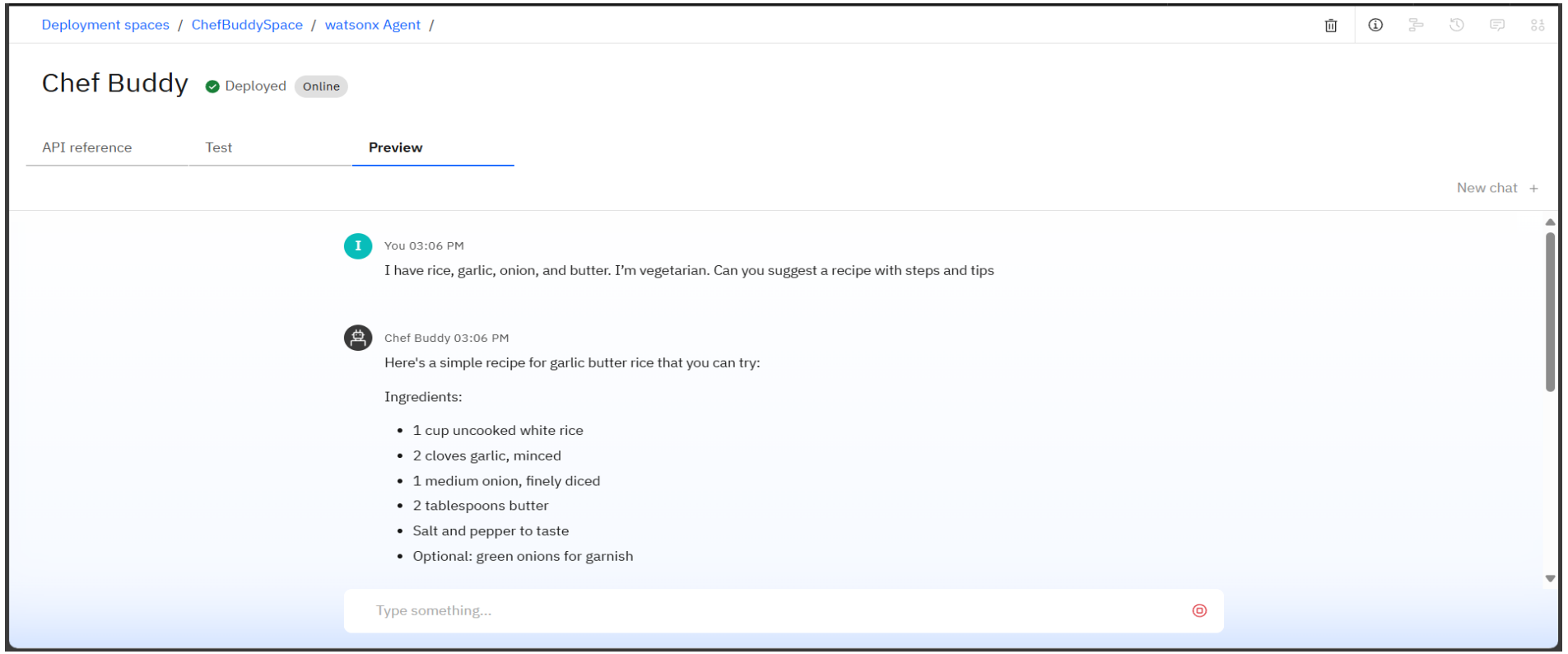
STEP 11: DEPLOYMENT TRIGGERED



STEP 12: DEPLOYED STATUS: ✅ ONLINE



RESULT



RESULT:

The deployed agent was tested with various user inputs through the IBM Watsonx Agent Lab interface.

Example Input:

"I have rice, garlic, onion, butter. I'm vegetarian. Can you suggest a recipe with steps?"

AI Response:

"Try this vegetarian Garlic Butter Rice recipe:

1.Sauté onion and garlic in butter.

2.Add rice and stir briefly.

3.Pour in water, cover, and cook until fluffy.

4.Season and serve.

You can substitute butter with ghee or olive oil for a vegan version.

CONCLUSION

- The Recipe Preparation Agent successfully transforms available ingredients into practical meal ideas using Agentic AI.
  The solution is simple, scalable, and user-friendly. It aligns well with goals like reducing food waste and making AI more accessible in everyday life.

FUTURE SCOPE

- Incorporate **speech or image input** for ingredient recognition
- Integrate **nutrition APIs** to provide calorie and health info
- Expand the agent into a **mobile app** for on-the-go use
- Add support for **regional and international cuisines**
- Train on **custom recipe datasets** for enhanced personalization

REFERENCES

- IBM watsonx.ai documentation
- Agentic AI Overview by IBM

IBM CERTIFICATIONS

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THANK YOU

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