Automated Composition of Aggregated Assistants

Tathagata Chakraborti, Shubham Agarwal, Krissy Brimijoin, Prerna Agarwal, Yara Rizk, Dario Silva Moran, Scott Boag, and Yasaman Khazaeni.

IBM Research

User

Assistant
realized as an
orchestrated
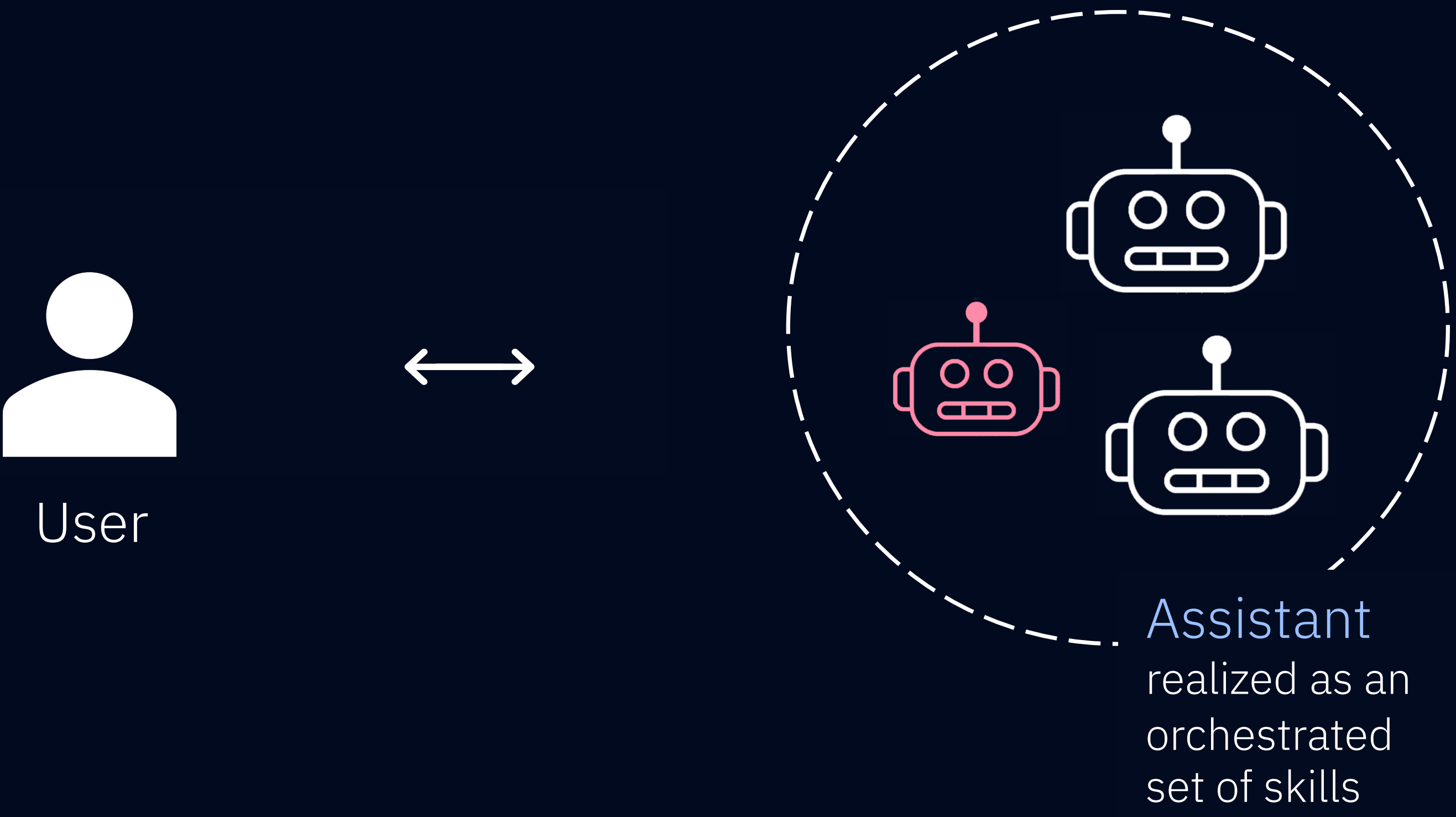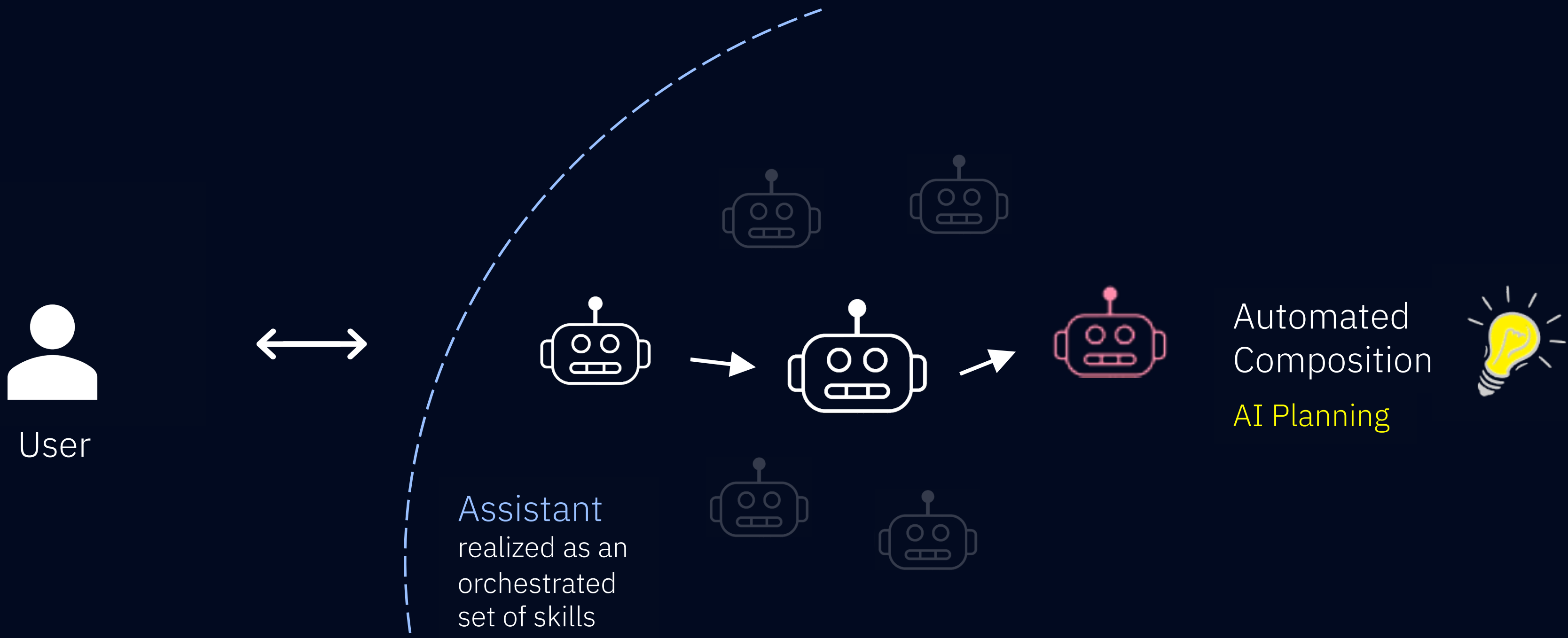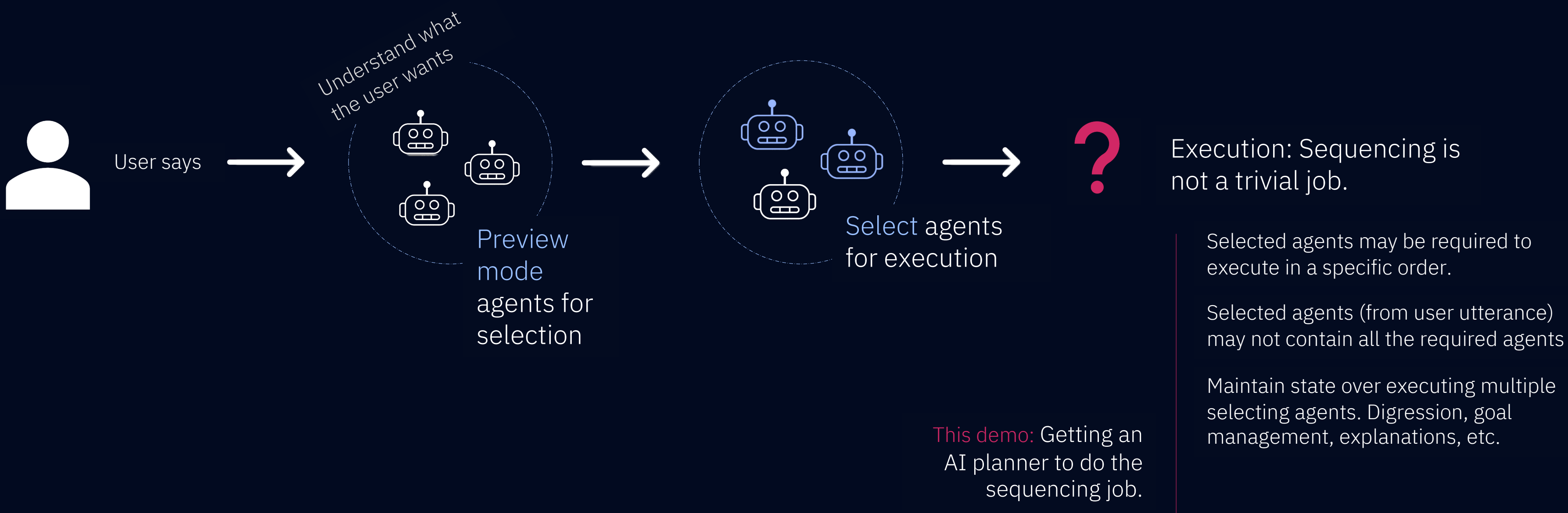set of skills

Modeling Sequential Behavior in Enterprise Applications

1. Beyond episodic interactions
2. Underlying business processes

User

Automated
Composition
AI Planning

Assistant
realized as an
orchestrated
set of skills

Hand off between Reasoning and NLU components

1. Agents model their own NLU
2. Planner models intelligent orchestration patterns in the context of conversations: digression, goal management, etc.

User says

Understand what the user wants

Preview mode agents for selection

Select agents for execution

Execution: Sequencing is not a trivial job.

- Selected agents may be required to execute in a specific order.
- Selected agents (from user utterance) may not contain all the required agents.
- Maintain state over executing multiple selecting agents. Digression, goal management, explanations, etc.

This demo: Getting an AI planner to do the sequencing job.

References

Explainable Composition of Aggregated Assistants. Sarath Sreedharan, Tathagata Chakraborti, Yara Rizk, and Yasaman Khazaeni. ICAPS 2020 Workshop on Explainable AI Planning.
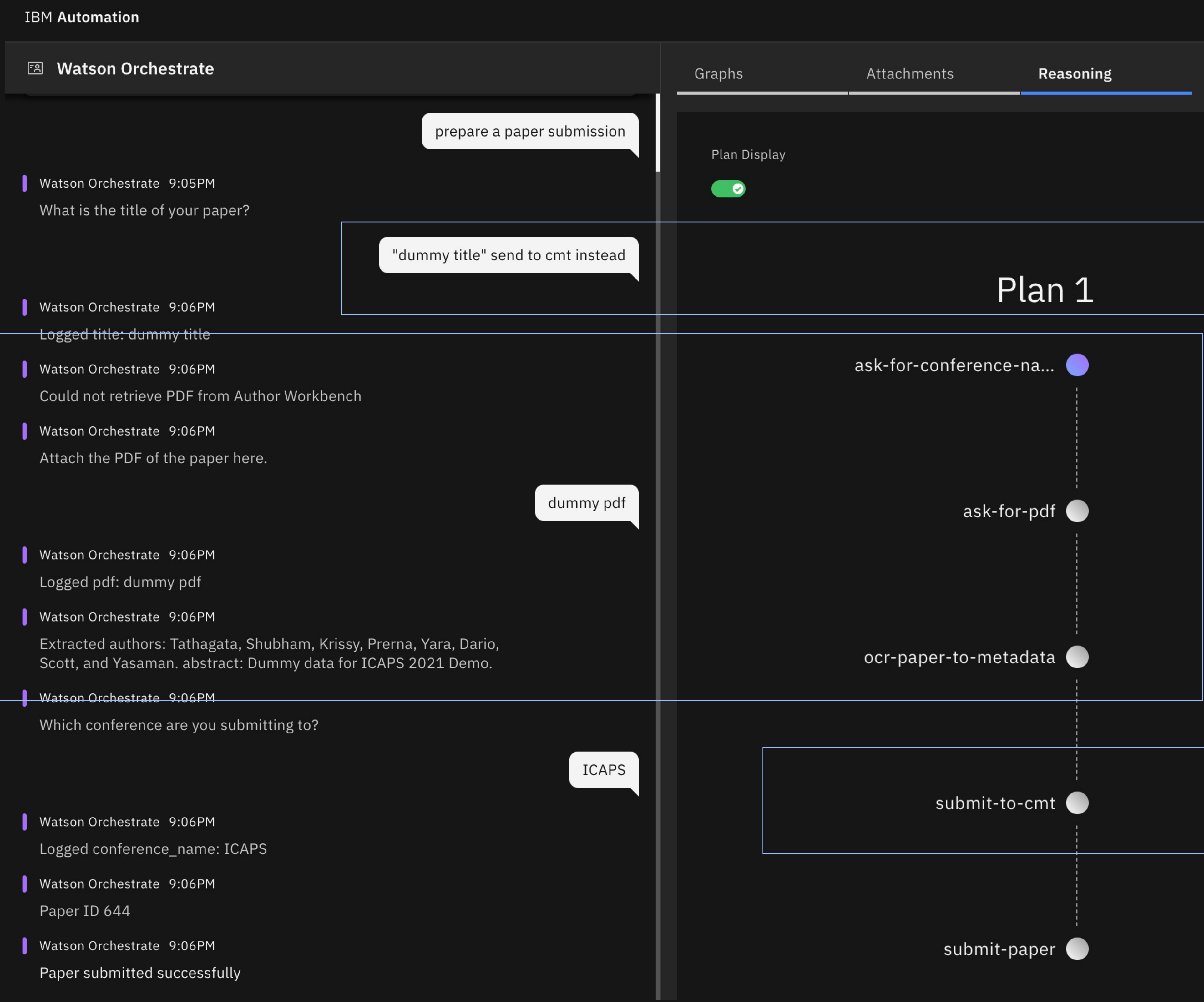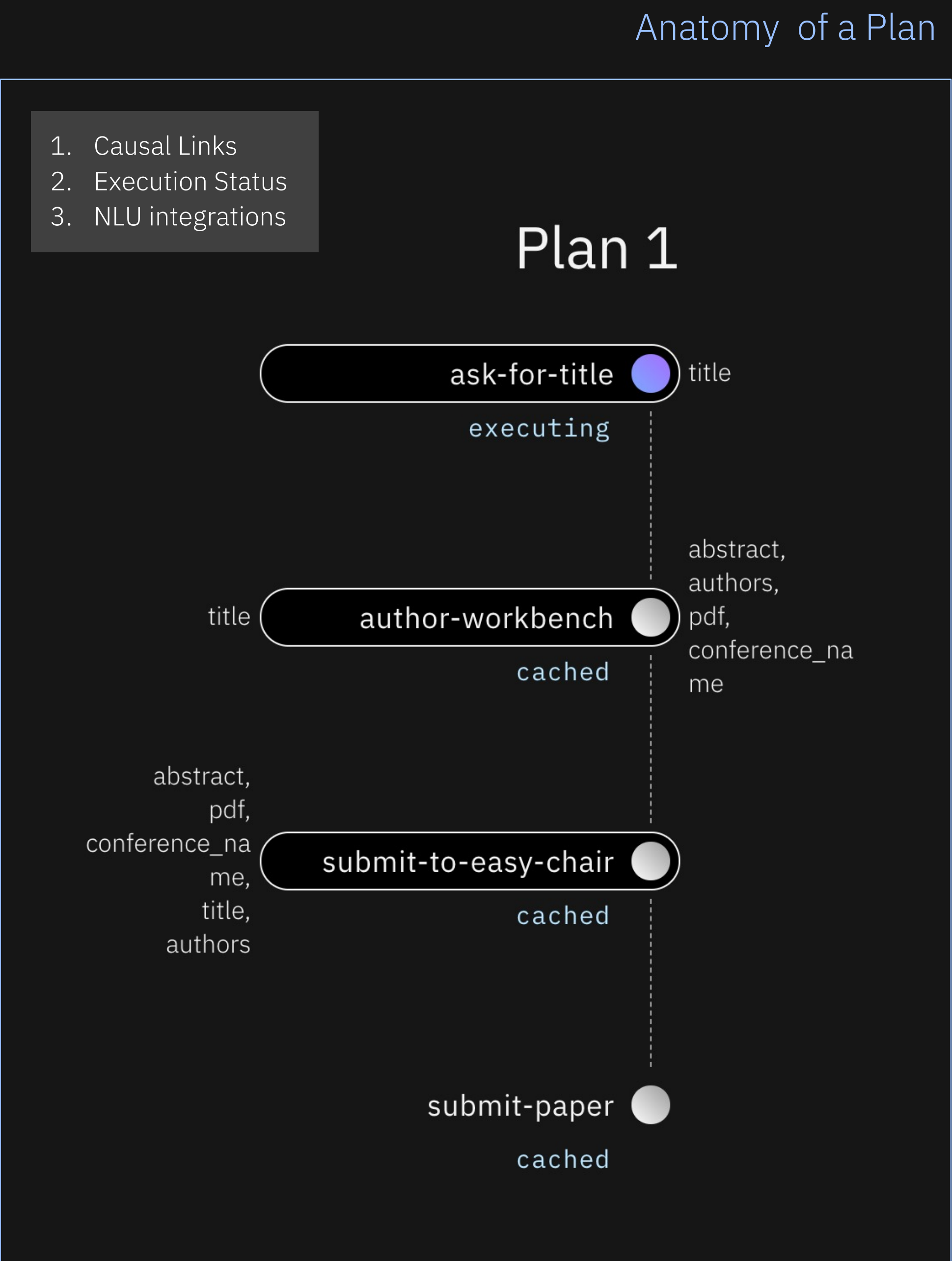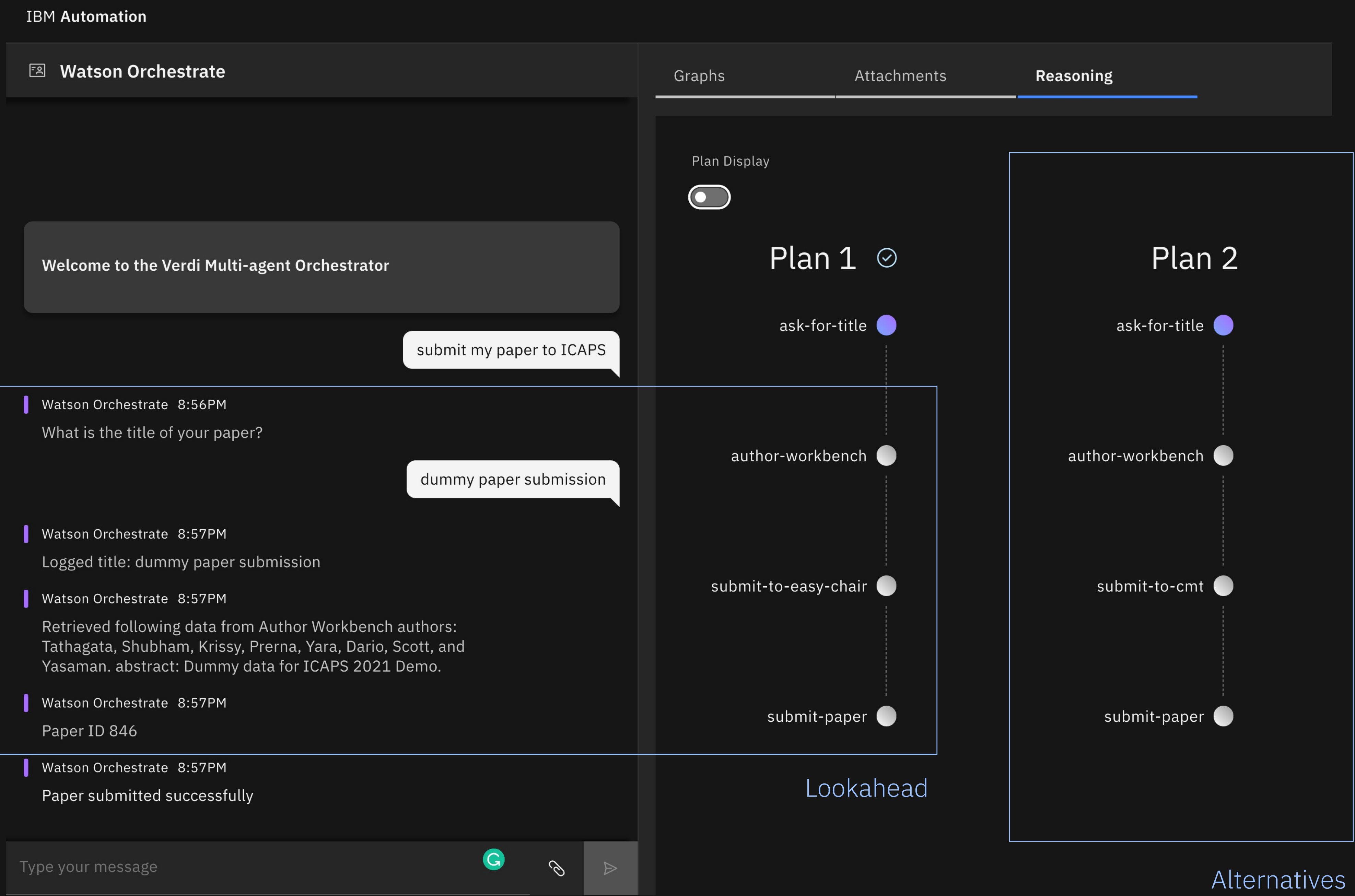
A Unified Conversational Assistant Framework for Business Process Automation. Yara Rizk, Abhisekh Bhandwalder, Scott Boag, Tathagata Chakraborti, Vatche Isahagian, Yasaman Khazaeni, Falk Pollock, and Merve Unuvar. AAAI 2020 Workshop on Intelligent Process Automation.

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IBM Automation

Watson Orchestrate

Graphs | Attachments | Reasoning

Plan Display

Plan 1 ✓

- ask-for-title
- author-workbench
- submit-to-easy-chair
- submit-paper

Lookahead

Plan 2

- ask-for-title
- author-workbench
- submit-to-cmt
- submit-paper

Alternatives

Welcome to the Verdi Multi-agent Orchestrator

submit my paper to ICAPS

Watson Orchestrate 8:56PM
What is the title of your paper?

dummy paper submission

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Logged title: dummy paper submission

Watson Orchestrate 8:57PM
Retrieved following data from Author Workbench authors: Tathagata, Shubham, Krissy, Prerna, Yara, Dario, Scott, and Yasaman. abstract: Dummy data for ICAPS 2021 Demo.

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Paper ID 846

Watson Orchestrate 8:57PM
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Type your message

Anatomy of a Plan

1. Causal Links
2. Execution Status
3. NLU integrations

Plan 1

- ask-for-title — title
  executing
- author-workbench — abstract, authors, pdf, conference_name
  cached
- submit-to-easy-chair — abstract, pdf, conference_name, title, authors
  cached
- submit-paper
  cached

IBM Automation

Watson Orchestrate

Graphs | Attachments | Reasoning

prepare a paper submission

Watson Orchestrate 9:05PM
What is the title of your paper?

Plan Display

Plan 1

"dummy title" send to cmt instead

Watson Orchestrate 9:06PM
Logged title: dummy title

Watson Orchestrate 9:06PM
Could not retrieve PDF from Author Workbench

Watson Orchestrate 9:06PM
Attach the PDF of the paper here.

dummy pdf

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Logged pdf: dummy pdf

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Extracted authors: Tathagata, Shubham, Krissy, Prerna, Yara, Dario, Scott, and Yasaman. abstract: Dummy data for ICAPS 2021 Demo.

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Plan Repair through conversation

On the fly Re-planning

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