

Agentic AI Multi-Agent Interoperability Extension for Managing Multiparty Conversations

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Introduction

Challenge: Existing multi-agent frameworks are unable to handle real-time, mixed-initiative multiparty conversations due to interoperability and coordination limitations.

Solution: Extending Open Voice Interoperability (OVON) standards to enable seamless AI agent collaboration via a universal, natural language-based API.

Use Cases

Trip Planning Example: Instead of a user manually engaging multiple travel agents, the **Convener** allows them to collaborate within a single conversation. The **Floor Manager** maintains context across agents (e.g., travel dates, preferences).

Healthcare Bed Allocation: Nurse proxy, bed allocation, and patient database agents collaboratively determine optimal patient placement **without requiring sequential user interactions.**

AI-Driven Secure Transactions: A user initiates a flower order. The **Convener** brings in a payment AI agent only when needed, ensuring **privacy and security.**

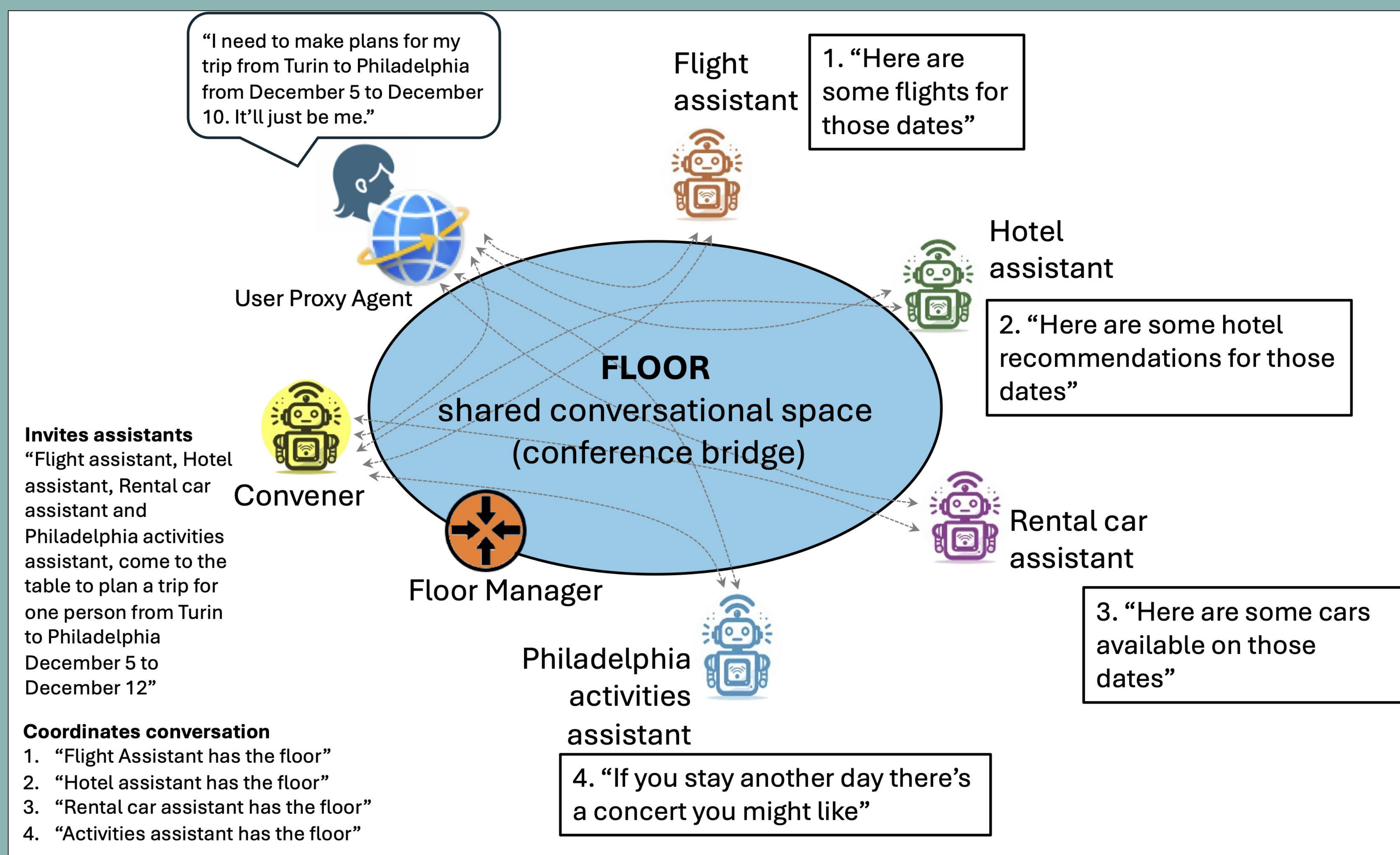
Key Concepts & Contributions

- ✓ Convener Agent: Manages agent invitations, turn-taking, and message relays.
- ✓ Floor Shared Conversational Space (The Floor): A structured conversation environment for multiple agents.
- ✓ Floor Manager: Ensures message delivery, controls participation, and prevents interruptions.
- ✓ Multi-Convener Support: Enables multiple agents to collaborate in real-time.
- ✓ Interruptions & Uninvited Agents Handling: Secures the conversation and manages interjections

How It Works

- Agent Communication via NLP-Based APIs**
- Conversation Envelope Protocols Ensure Interoperability**
- Scalable & Technology-Agnostic Multi-Agent Architecture**
- ✓ **Backward Compatible** with existing AI systems.
- ✓ **Technology-Agnostic:** Supports different AI models and frameworks.
- ✓ **Efficient & Secure:** Enforces structured agent participation with role-based controls.

Full paper:
[arXiv:2411.05828](https://arxiv.org/abs/2411.05828)



OVON specs



Results & Future Work

- Enhanced multi-agent collaboration** in dynamic conversations.
- Improved security** with controlled participation and message filtering.
- Scalability** for diverse AI-driven interactions across industries.
- Next Steps:** Advanced **context management, observability, and security** enhancements.

