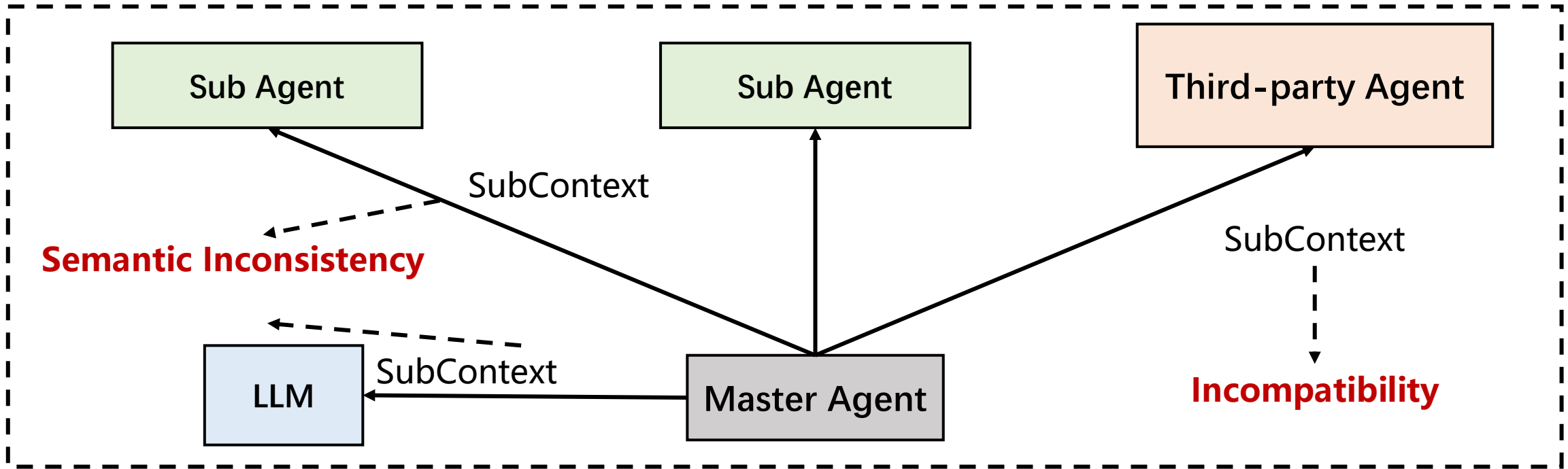


Optimizing Agent Context Interactions

IETF 125 Hackathon Report

on behalf of Champions(Zeze Chang, Shuping Peng)

Motivation and Challenges



- Existing agent protocols (e.g., A2A) lack complex task management. Plain-text context is redundant and consumes too many tokens.



- It is necessary to specify structured semantic norms.

Proposal

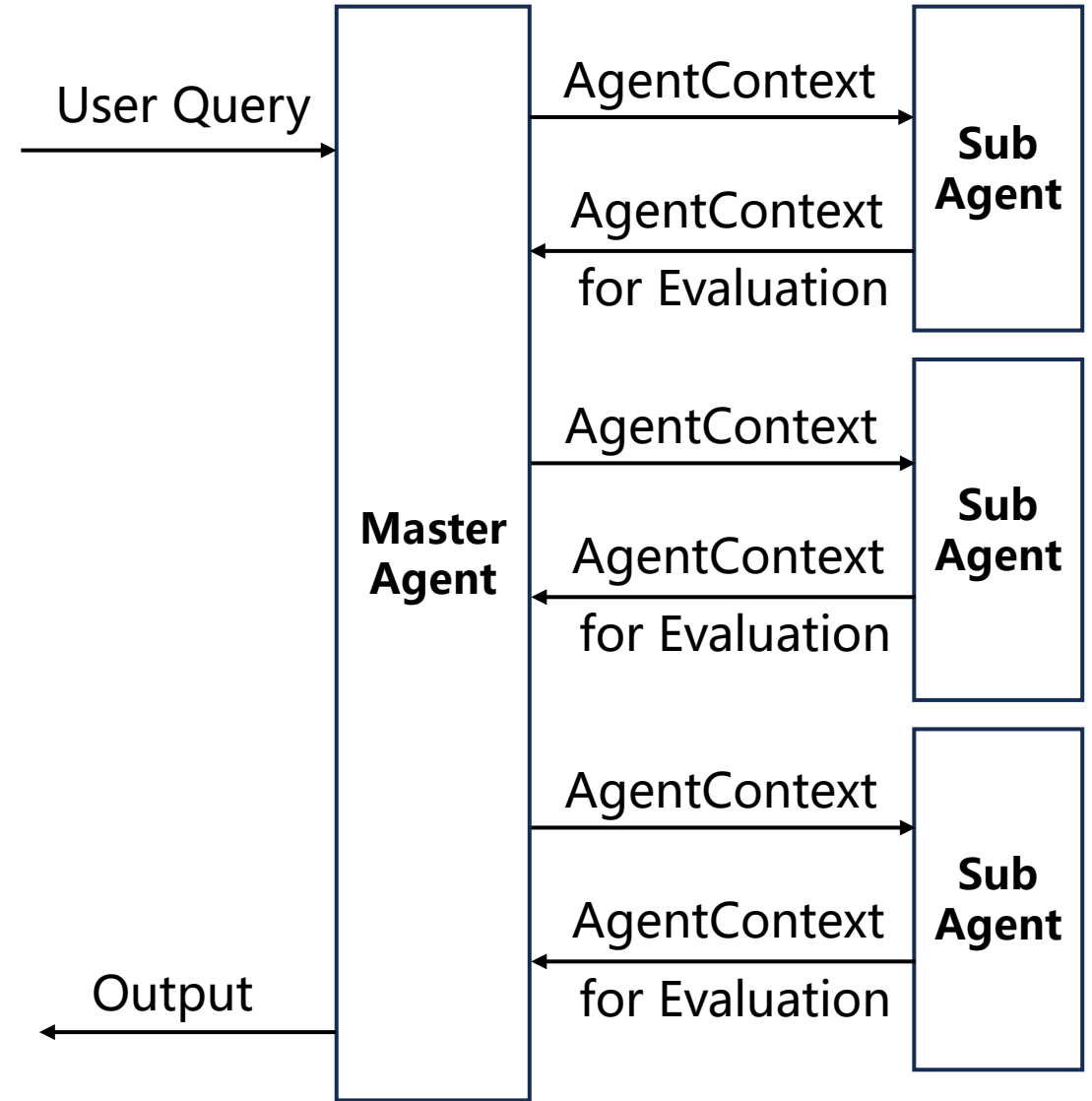
- **Structured context interaction mechanism:**
 - Replaces redundant plain-text transmission
 - Reduces token consumption
 - Shortens task execution time
- **Task context management mechanism:**
 - Manages context boundaries and execution status for multi-agent tasks
 - Improves success rate of complex task execution

```
"AgentContext": {  
  "AgentID": "",  
  "AgentName": "",  
  "SubTaskID": "",  
  "SubTaskName": "",  
  "Dependencies": [],  
  "Context/ContextURI": "",  
  "todoItems": [ "itemId": "", "description": "" ],  
  "ItemstateUpdates": [ "itemId": "", "state": 0 ],  
  "KeyInformation": [ "itemId": "", "outputabstract": "" ],  
}
```

```
"TaskContext": {  
  "TaskID": "",  
  "UserQuery": "",  
  "TaskName": "",  
  "TaskDescription": "",  
  "GoalStatus": [ "Goal": "", "Status": "" ]  
  "OverallStatus": "",  
  "StartTime": "",  
  "EndTime": "",  
}
```

Hackathon Setup

- Financial report analysis of new energy vehicle companies is used as the demo scenario.
- The multi-agent system adopts a **master-sub architecture** with eight task-specific sub-agents.
- **Structured context interaction** is compared with **plain-text context exchange** to evaluate improvements in token consumption and execution time.



Hackathon Results

Agent Context Interaction Optimization: Performance Dashboard

Generated at 2026-03-15T10:35:46

Comparison Metrics

Version	Total Tokens	Task Time (seconds)
Structured Context	29,921	519.00
PlainText Context	93,348	837.15

Structured Context Token Reduction vs PlainText Context

67.95% ↓

Structured Context Time Reduction vs PlainText Context

38.00% ↓

Structured Context source: ACP_hackathon\20260315_103020.txt

PlainText Context source: baseline\20260315_103539.txt

Next Steps

- **User Profiling** – Add fields to TaskContext and AgentContext for user preferences, history, and situation, enabling personalized collaboration while enforcing data minimization and consent.
- **Privacy Protection** – Mandate encryption, access control, and anonymization in context transfer to safeguard user data and ensure regulatory compliance.
- **Protocol Self-Evolution** – Build in extensibility (optional fields, version negotiation) so the protocol can adapt to future needs without breaking interoperability.

Feedback and Collaboration are welcome!

Thank you to all the participants!

- Olorundare James Kunle
- Zhuoran Ma,
- Muntaser Syed,
- Muhammad Awais Jadoon,
- Ujjwal Upadhyay
- Zeze Chang
- Shuping Peng