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Agentic DX

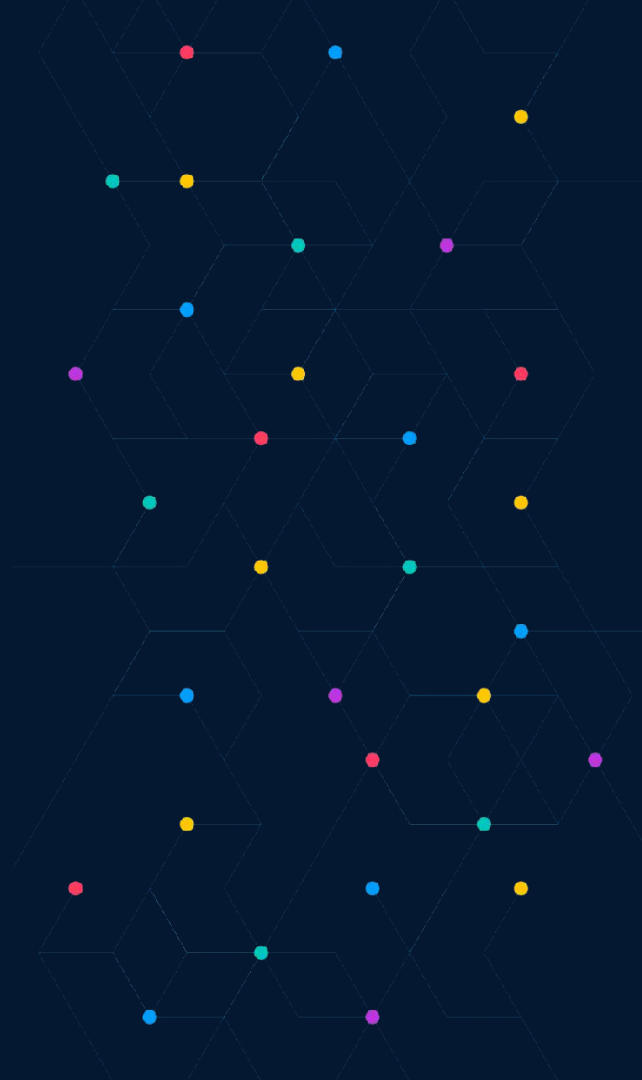
Bringing Your IDP Into the IDE

Presented By:

Adnan Vahora, Rinkal Mav



MOTOROLA SOLUTIONS



6

Contributor teams
developing platform

> 4k

Monthly active
developers using IDP





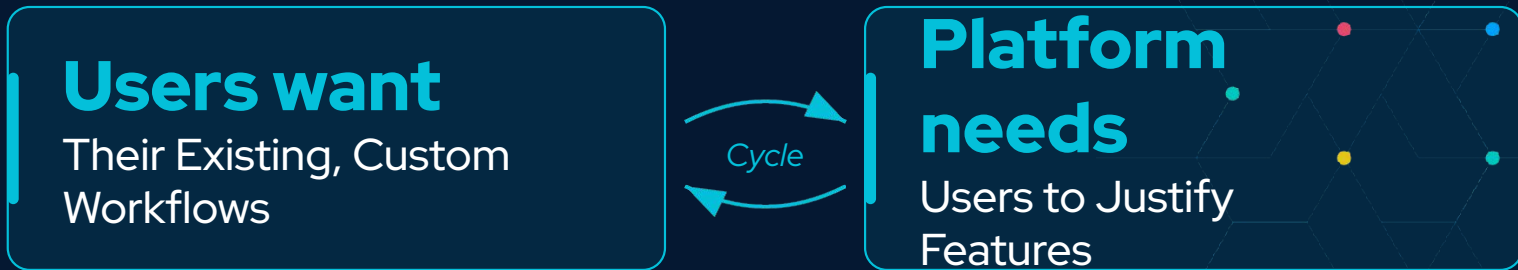
22%

Adoption

Scaling the Internal Developer Portal



The Chicken & Egg Trap



Let's Bring IDP to IDE

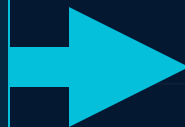
"Instead of making them come to us, let's go to their natural habitat"



The Partnership Vision

The Ask

You Build It, We Integrate It.



BUT

...



The Human Gap



Domain
Experts

≠



AI
Experts

The "Reality"



Extended R&D & Redundant Code



Extended R&D

Slower time-to-market due to complex research cycles.

+



Redundant Solving

Teams tackling the same problems independently.



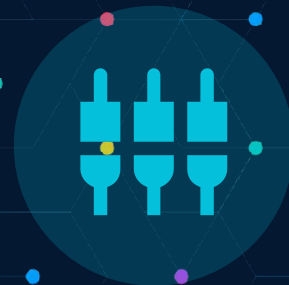
Impact:

Users Forced to Orchestrate.

The cognitive load of modern platform engineering.



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Agent workflow constitution



Security First
Zero Trust Execution



Human-in-the-Loop

User approval Before:

- Tool Execution
- Agent Handoff



A2A Native Agent

Direct agent-to-agent
autonomous collaboration.

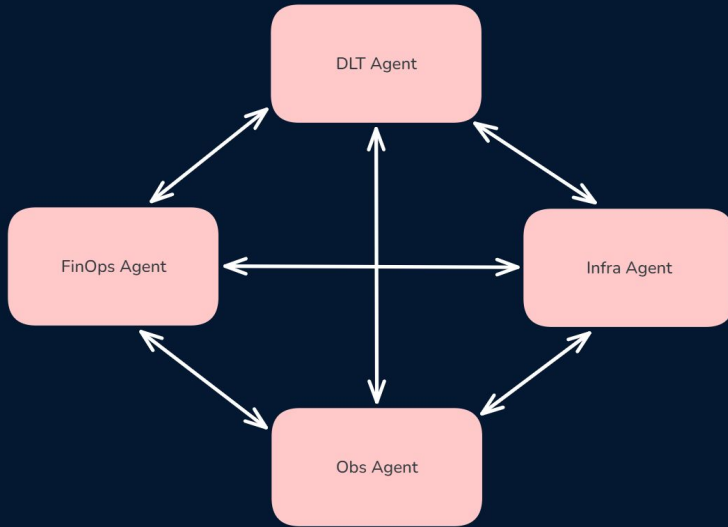


Distributed Agentic Patterns



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Canonical Mesh

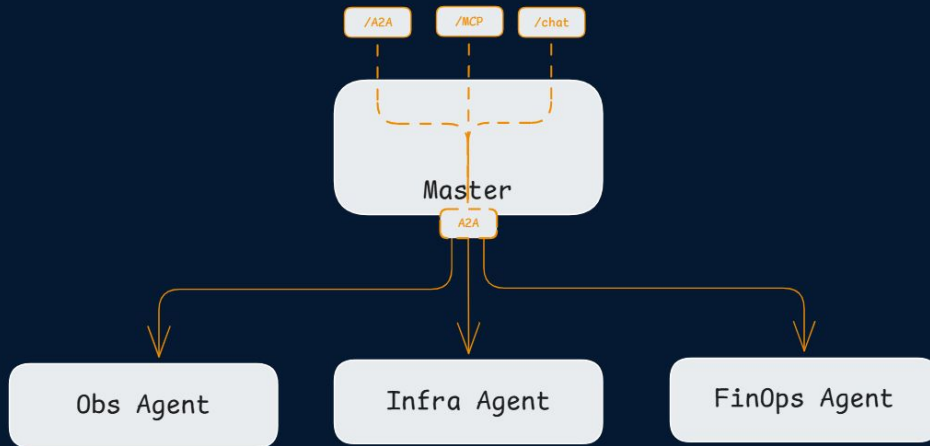


- Agent: **Routing** + Answering
- “Flat Mesh does not scale”
- Hallucinations Snowballing
- Cascading Trust Issue



The Master Agent

Master with flat hierarchy



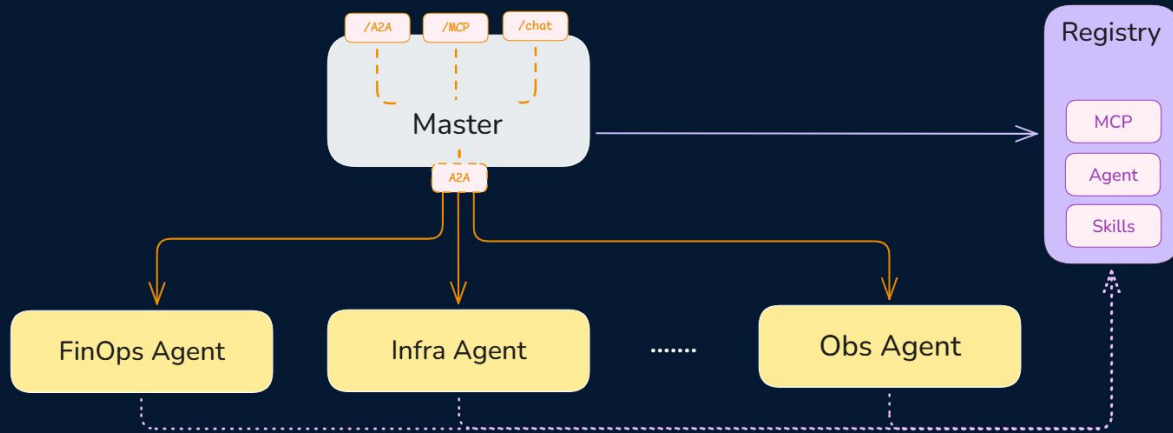
Problem

Agents are statically passed to Master



The Master Agent

MCP/Agent Registry



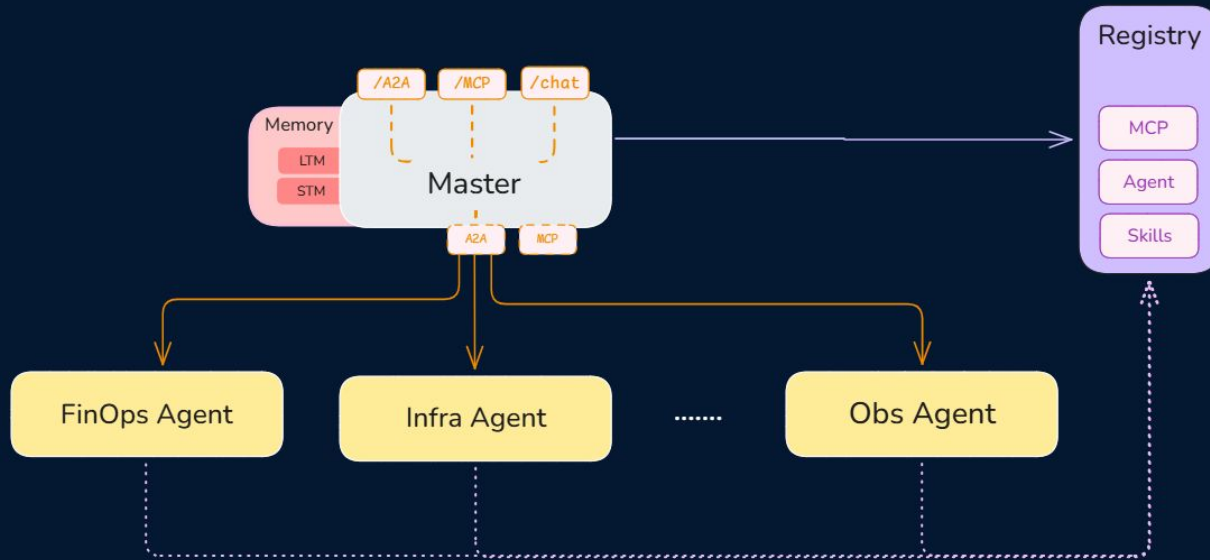
Problem

How agent should preserve user preference?



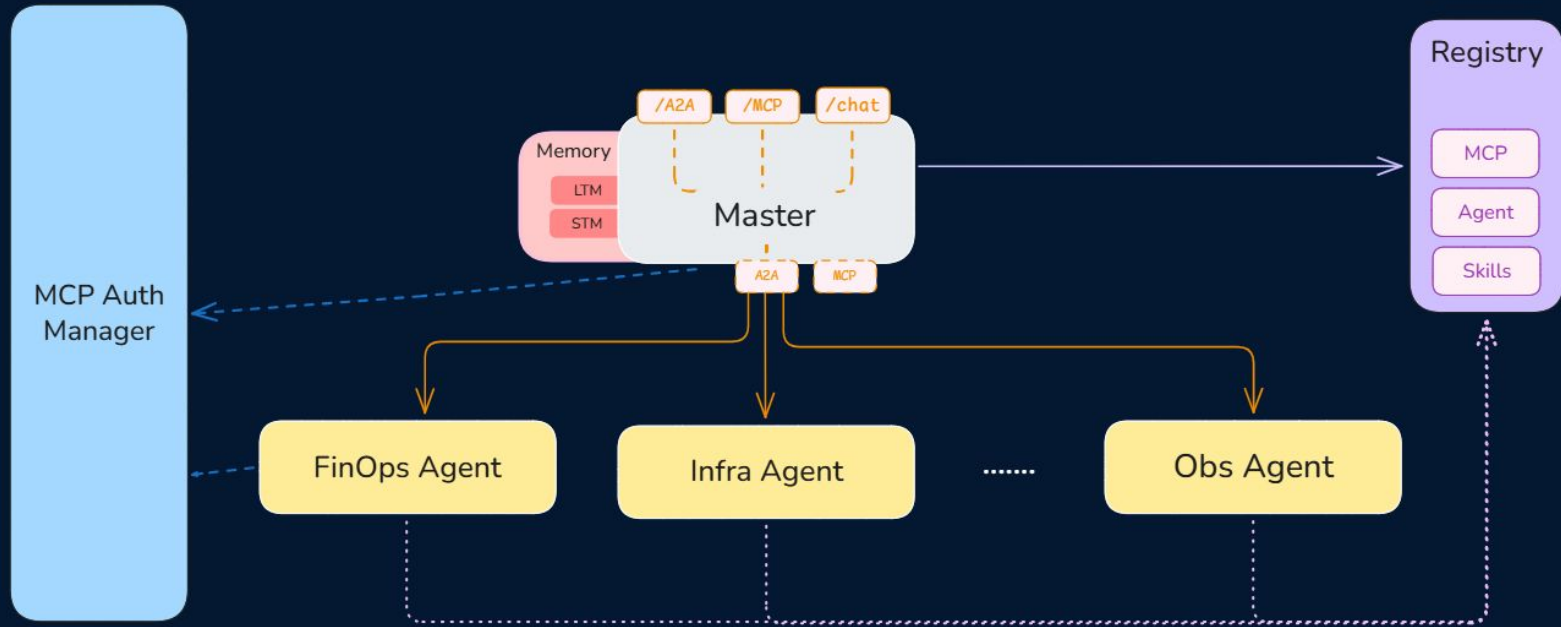
The Master Agent

Memory



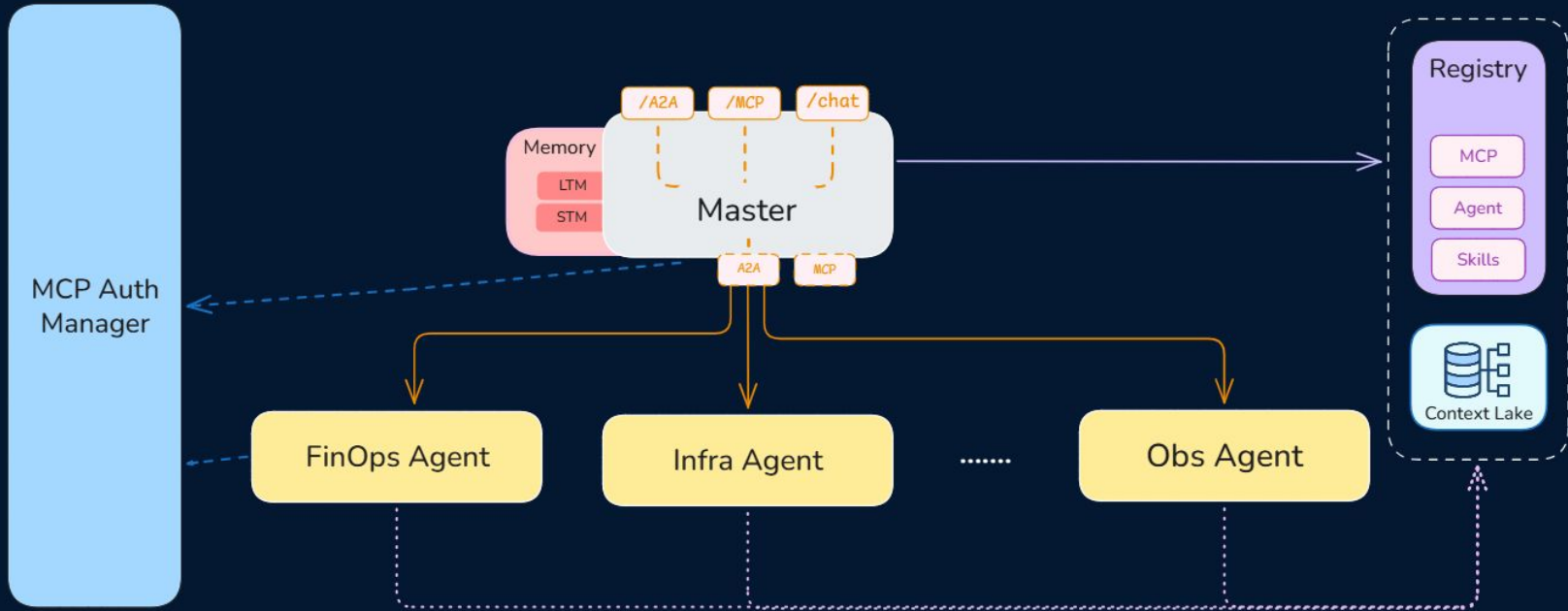
The Master Agent

MCP Auth Manager



The Master Agent

Context Lake



The Master Agent: Context Lake

The big picture

[07] Model Context Protocol server

[06] Hybrid retriever

[05] Multi-hybrid vault storage

[04] Embedding generation

[03] Processing and Enrichment layer

[02] Semantic extraction

[01] Data ingestion tier



The Master Agent: Context Lake

01. Data Ingestion Tier

The base ingestion tier continuously tracks high-value knowledge repositories across the organization's collaborative ecosystem, **capturing both native text and embedded visual attachments (screenshots, diagrams, and scans).**



Jira Tickets



Confluence Pages



Internal Wikis



Google Docs



Enterprise PDFs

01 Ingest

02 Extract

03 Enrich

04 Embed

05 Store

06 Retrieve

07 MCP



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The Master Agent: Context Lake

02. Semantic Extraction Layer



Text / Markdown Parsers

Confluence, wikis, Docs. Heading hierarchy and preserved.



Ticket Document-Parsers

JIRA ADF → typed nodes. Summary, criteria, and comments as distinct sub-types.



Document Layout Extractors

Tables, PDFs, slides. Code blocks tagged with language from fence or heuristic.



Visual & OCR Extraction Pipeline

OCR run on images and scans. Outputs raw text + confidence score + original image path.

Outputs: text chunk (markdown) • code chunk (language-tagged) • image artifact (OCR + path) • structured chunk (tables/JSON)

Note: OCR here is extraction only. Embedding strategy for raw vs. text is decided in layer 04.

01 Ingest

• 02 Extract

03 Enrich

04 Embed

05 Store

06 Retrieve

07 MCP



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The Master Agent: Context Lake

03. Processing & Enrichment



Semantic Chunking

Splits content based on clear topical transitions and thematic sections, bypassing rigid character limits.



Metadata Inoculation

Appends critical context for the master agent:

- Project definitions & historical updates
- Team access control levels
- Modality flags (e.g., `contains_extracted_ocr_text`)

01 Ingest

02 Extract

03 Enrich

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The Master Agent: Context Lake

04. Embedding generation

Input Chunks



Prose



Code



OCR Text



Images

Modality router

Code context → **code**

Text context → **text**

Image context → **image**

Text embedder (1536d)

Generates synthetic questions for enhanced prose retrieval.

text-embedding-3-large · BGE-M3

Code embedder (2048d)

Semantic understanding of data flows and function docstrings.

voyage-code-2 · CodeBERT

Visual embedder (768d)

CLIP-based embedding to preserve spatial layout context.

CLIP VIT-L/14 · ImageBind

01 Ingest

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The Master Agent: Context Lake

05. Multi-Hybrid Vault Storage

Dense index

Isolated, per-modality ANN collections to preserve vector space integrity.

text_chunks

code_chunks

image_frames

Qdrant | HNSW

Sparse index

Unified BM25 index over tokenized text strings. Guarantees exact matches.

Elasticsearch

SPLADE

Graph store

Preserves hard entity relationships and dependencies. Enables 1-2 hop traversal.

Neo4j | GraphRAG

Relational metadata

Structured attribute envelope per chunk. Executes deterministic pre-filtering.

Postgres | pre-filter

01 Ingest

02 Extract

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07 MCP



The Master Agent: Context Lake

06. Hybrid Retrieval



Dense Retrieval

Semantic ANN

Cross-modal conceptual matching for text, code, and images.

Qdrant | HNSW



Sparse Retrieval

Keyword BM25

Token-level exact matches for technical terms and identifiers.

Elasticsearch | SPLADE



Hybrid Fusion

RRF + CrossEncoder

Multi-index list merging refined by semantic reranking.

Top-10 Rank Refinement

01 Ingest

02 Extract

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• 06 Retrieve

07 MCP



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The Master Agent: Context Lake

07. MCP Server



Any agent, any framework

Supports diverse AI agent architectures and development stacks seamlessly.



Knowing + doing

Bridges the gap between raw data access and intelligent agent action execution.

MCP Tool Call

```
{
  "method": "tools/call",
  "params": {
    "name": "query_lake",
    "arguments": {...}
  }
}
```

Standardized execution protocol for secure, agent-driven tool interaction.

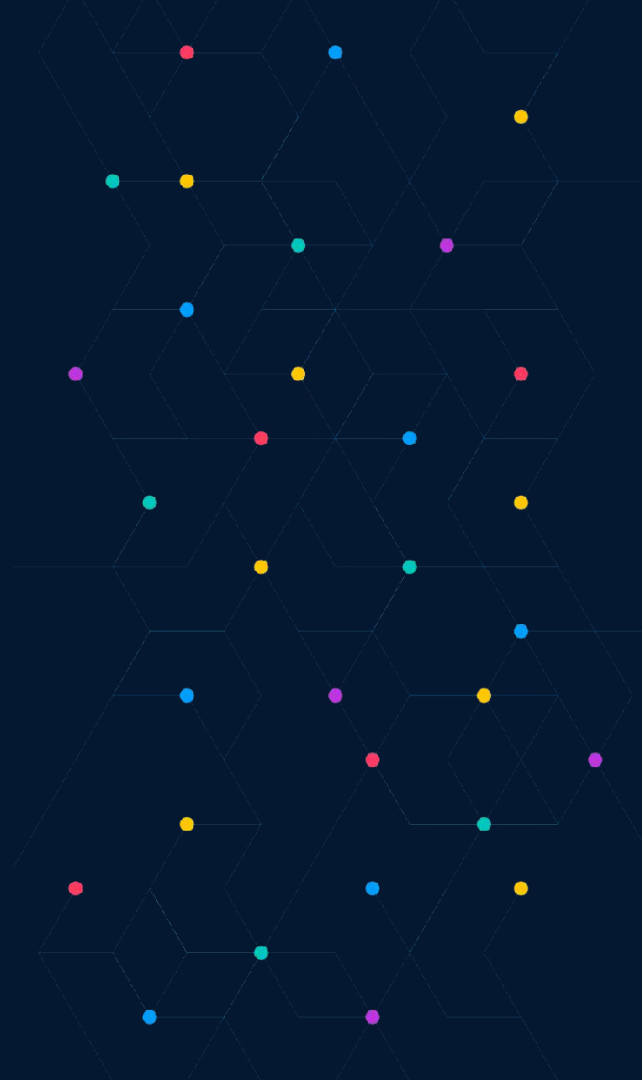
MCP Server – the boundary between retrieval infrastructure and agent reasoning.

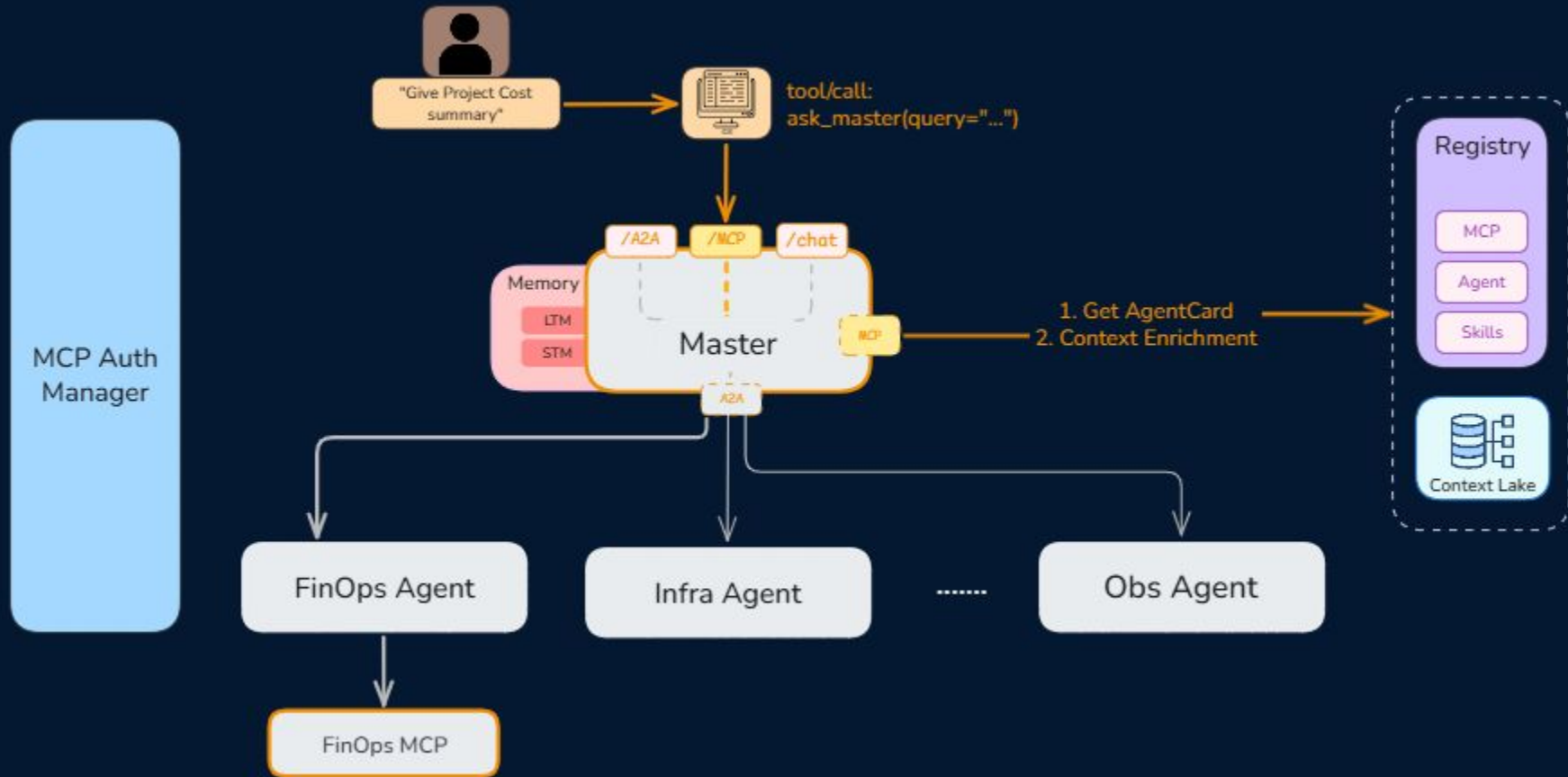


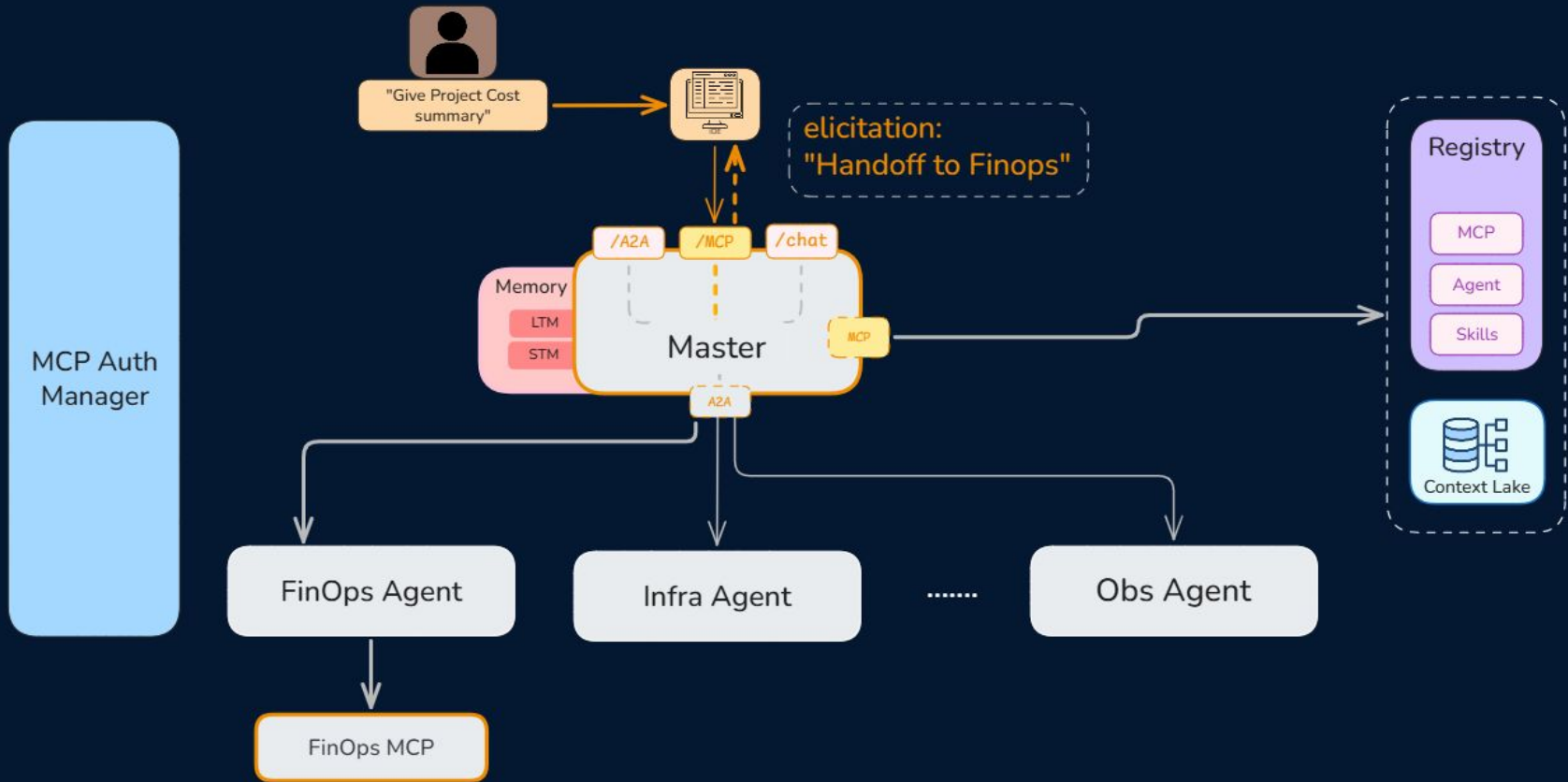
Master Agent in Action

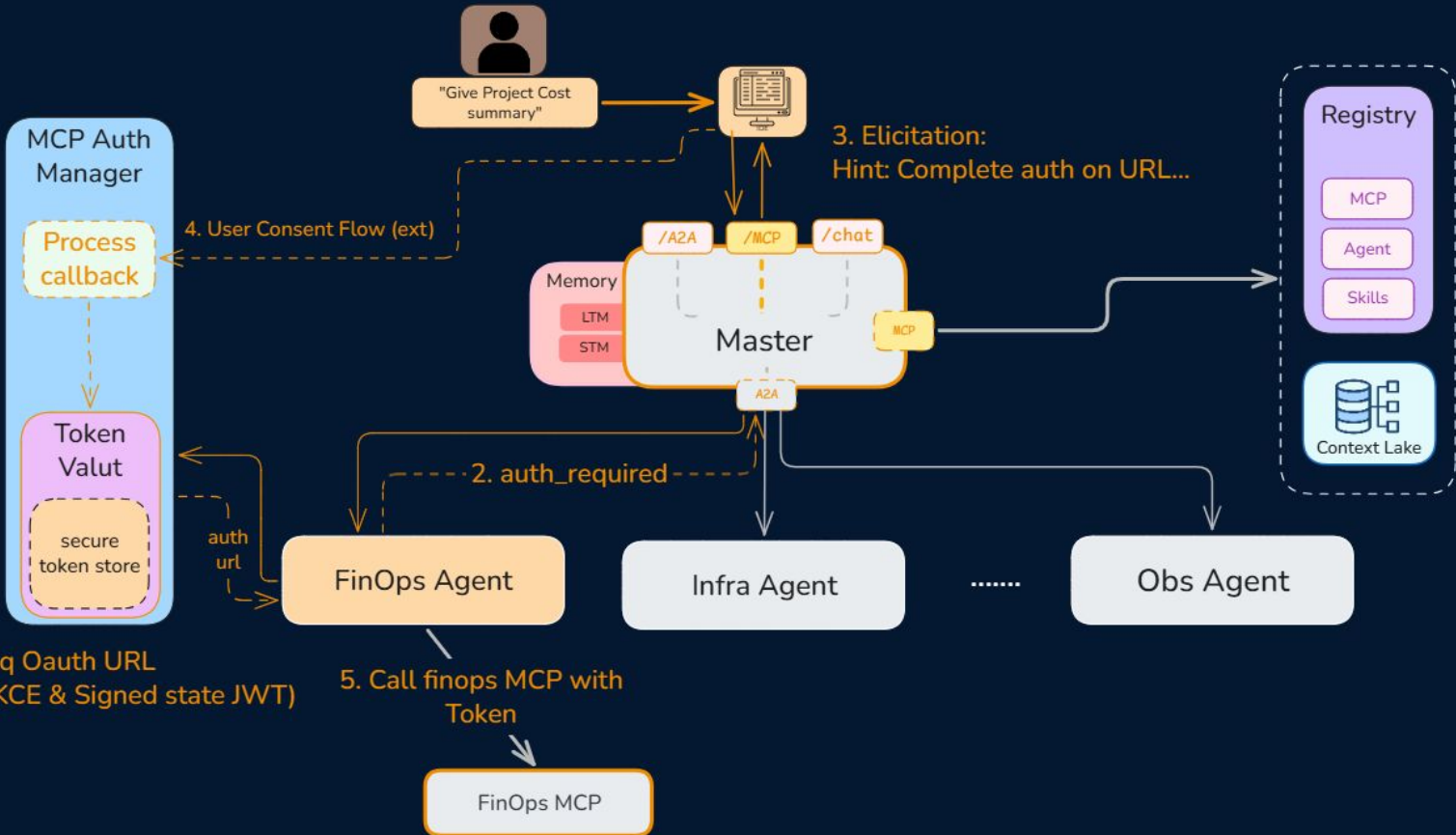


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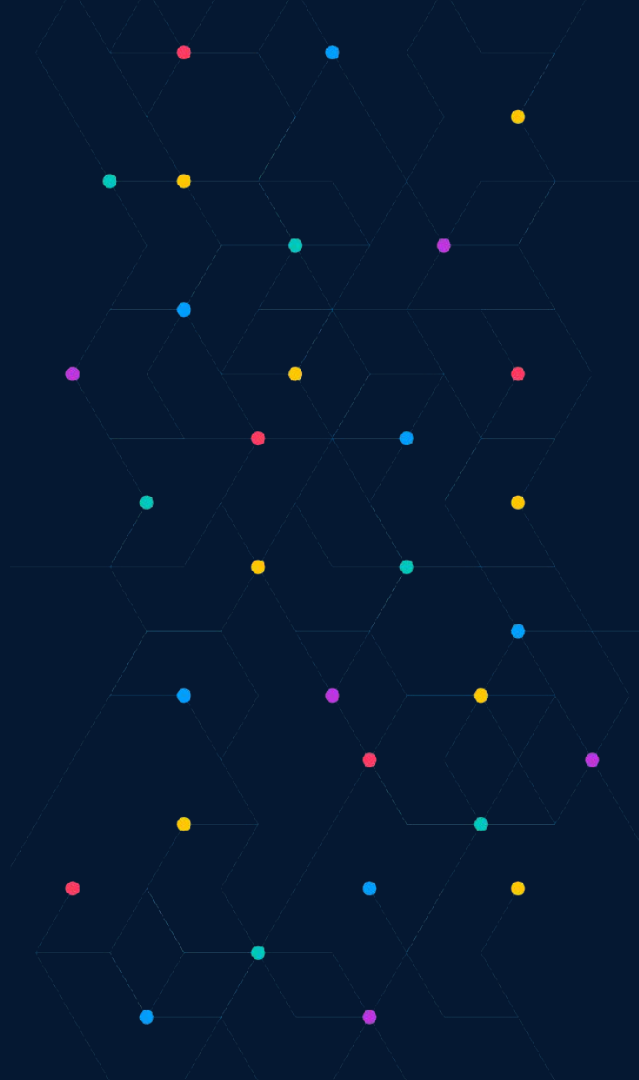




The Master Agent

MCP x A2A mapping guide

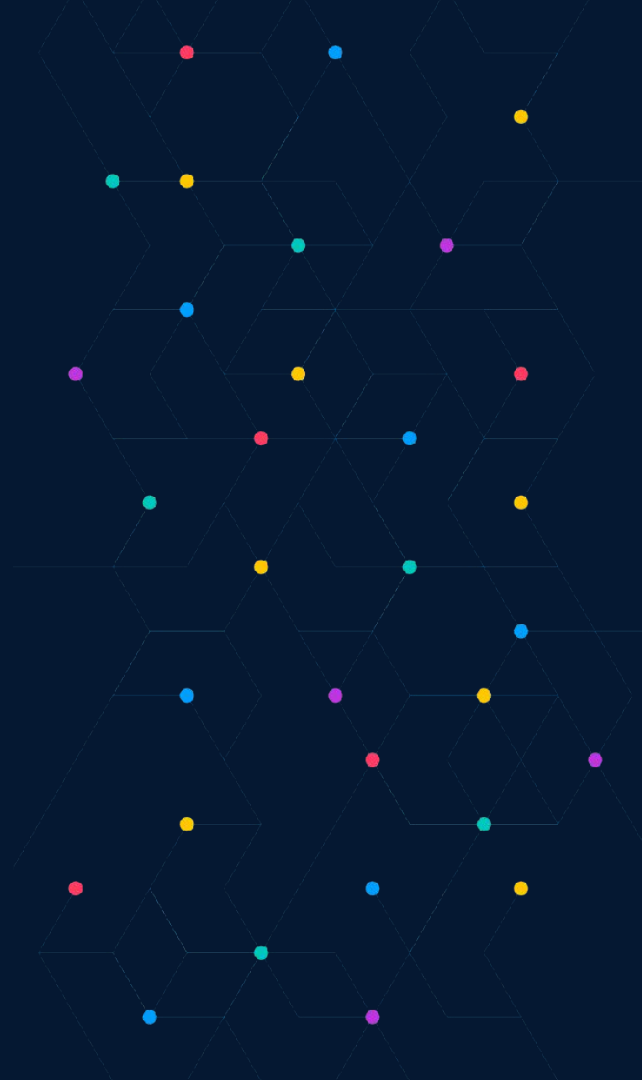
A2A	MCP
Input Required	Elicitation user clarification
Auth Required	Elicitation consent URL
Completed Failed	Tool result
Artifacts	MCP Resources
Cancelled	Notification / Cancelled



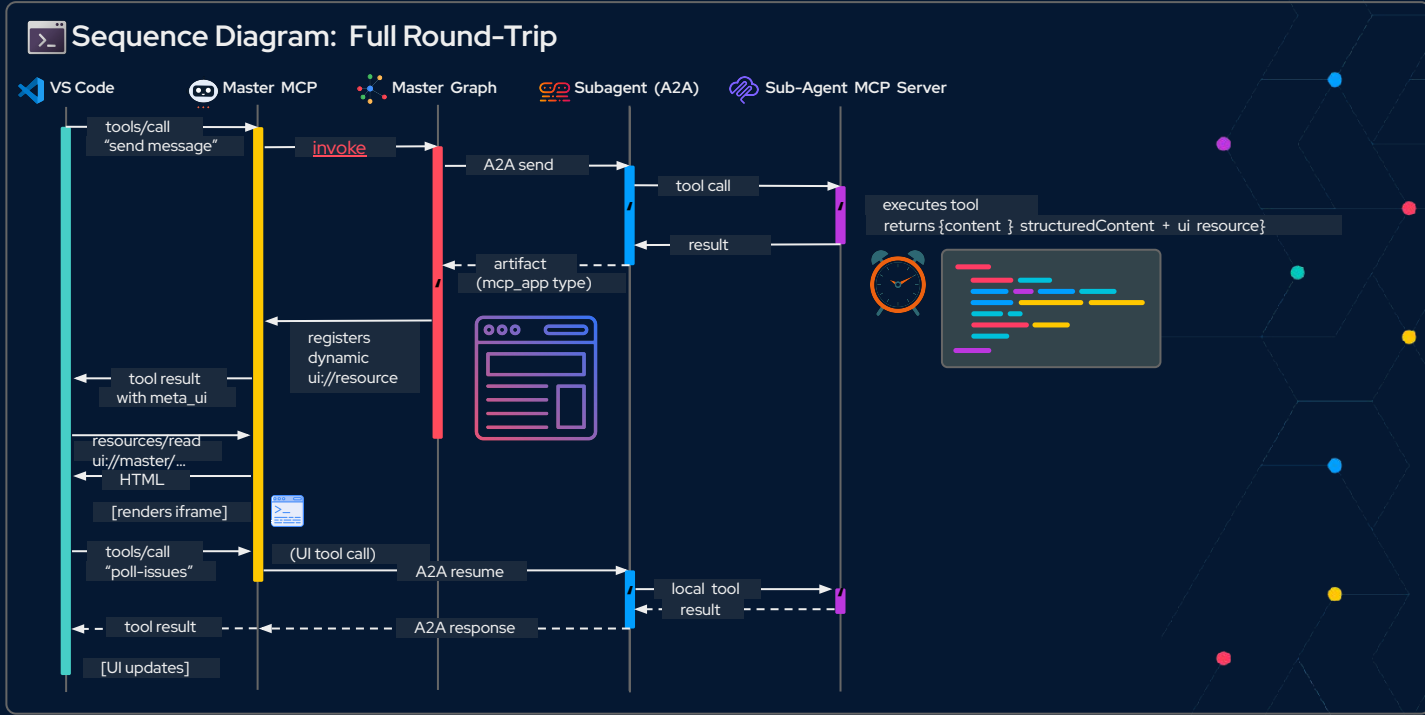
MCP Apps



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MCP Apps



Key Takeaways

Remote agent patterns that worked for us

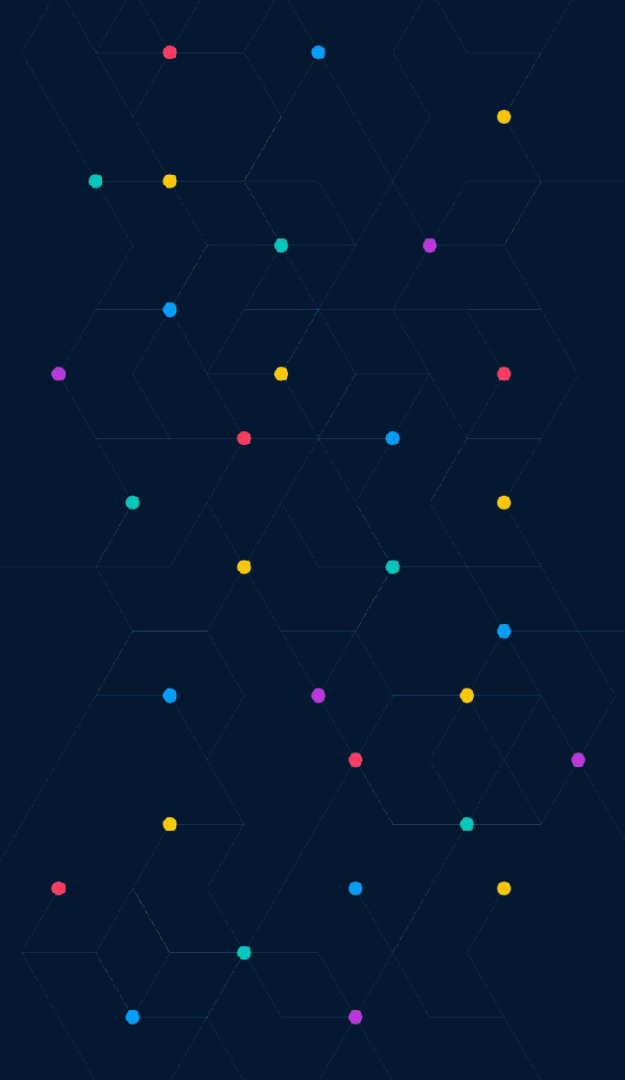
Managing Auth & HITL event from nested remote agents

MCP < - > A2A compatibility metrics

Sharing Tribal knowledge to Agent

MCP Apps with A2A

Anatomy of a composable agent component.



Meet the Speakers



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Software Engineer
Motorola Solutions



Rinkal Mav

AI/ML Engineer
Motorola Solutions

