

Bloomberg

Interceptors for MCP

A Production-Tested Standard
for Agentic Middleware

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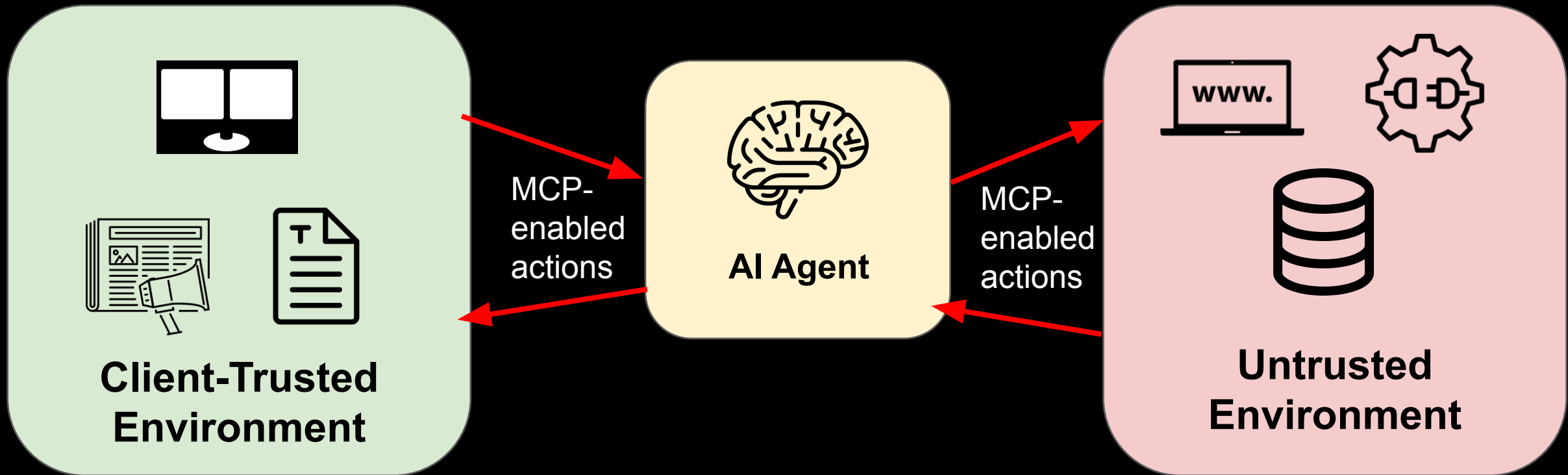
Cannis Chan (Technical Product Manager, AI Platforms, Office of the CTO @ Bloomberg)

Agenda

1. The Problems
2. Technical Deep Dive
3. Real-World Alignment

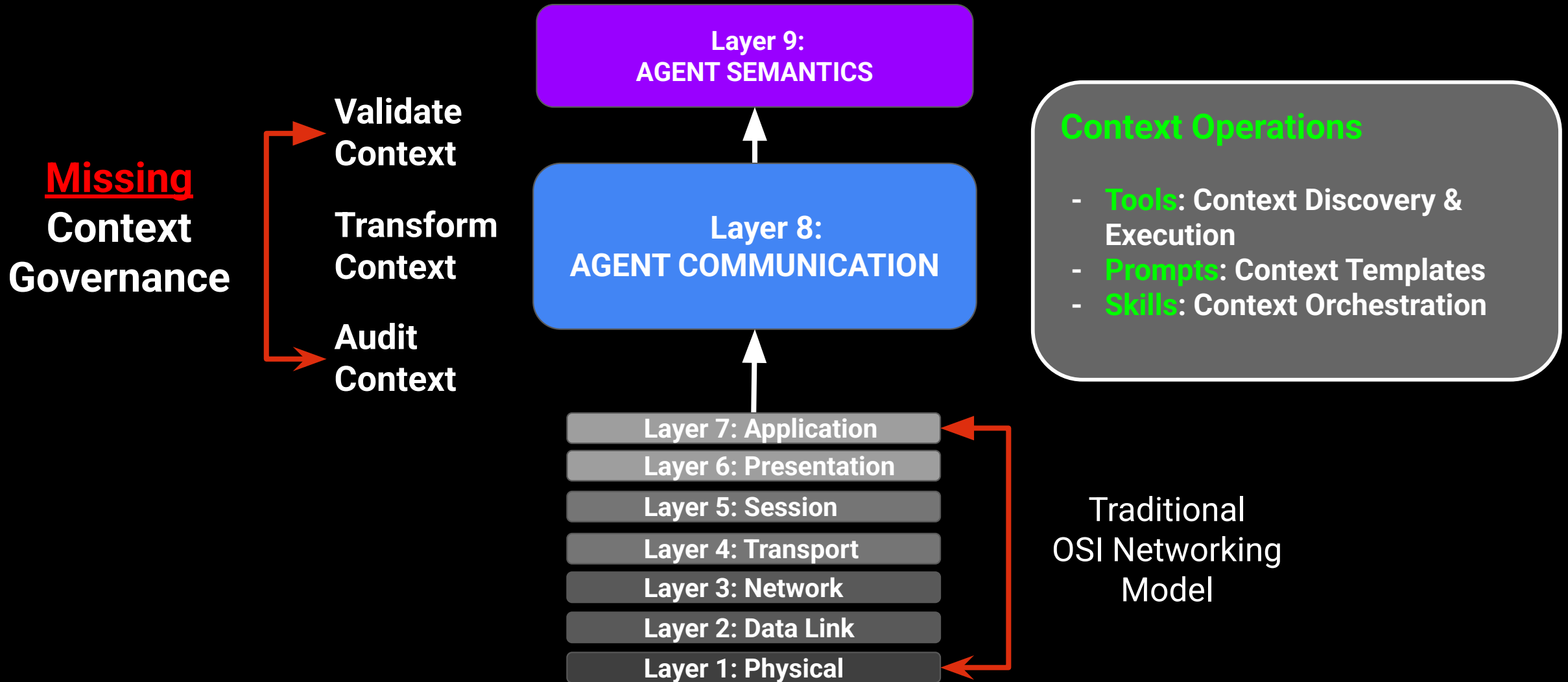
The Missing Trust Boundary

Clients want AI that helps them move faster – but Bloomberg has to deliver that value with both **control** and **trustworthiness**.



AI is executing across trust boundaries **without controls or verifications**

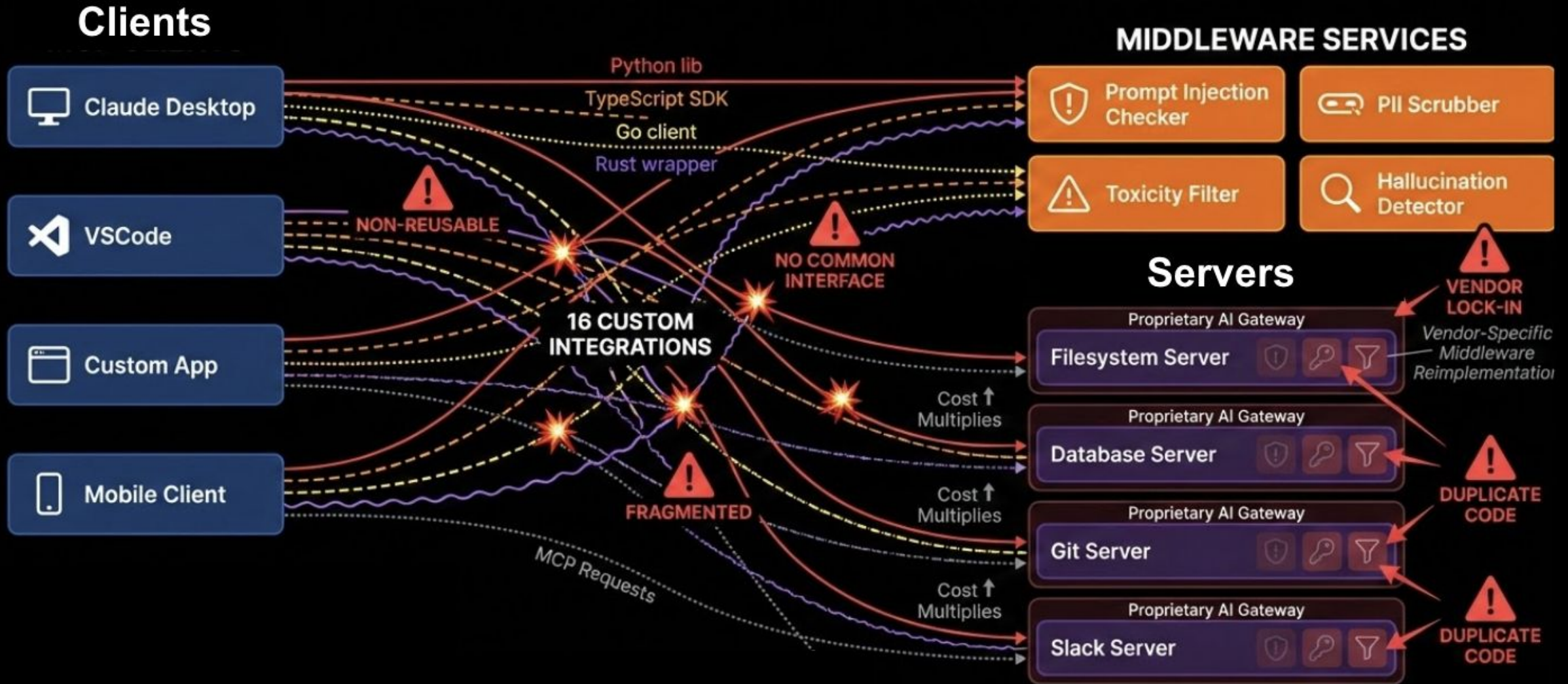
The Missing Primitive



Industry Validation

- **Amazon Bedrock AgentCore**
- **Claude Code Hooks**
- **OpenAI Guardrails**
- **Various Community & Vendor Solutions**

The MxN Middleware Crisis



Interceptors

- Extension to core MCP spec
- Elevates **Middleware as first-class citizen**
 - Alongside Tools, Prompts, etc.
- Protocol-level standardization for intercepting Events
 - Can intercept any Event with a standardized payload
- Two Types of Interceptors
 - **Validators & Mutators**

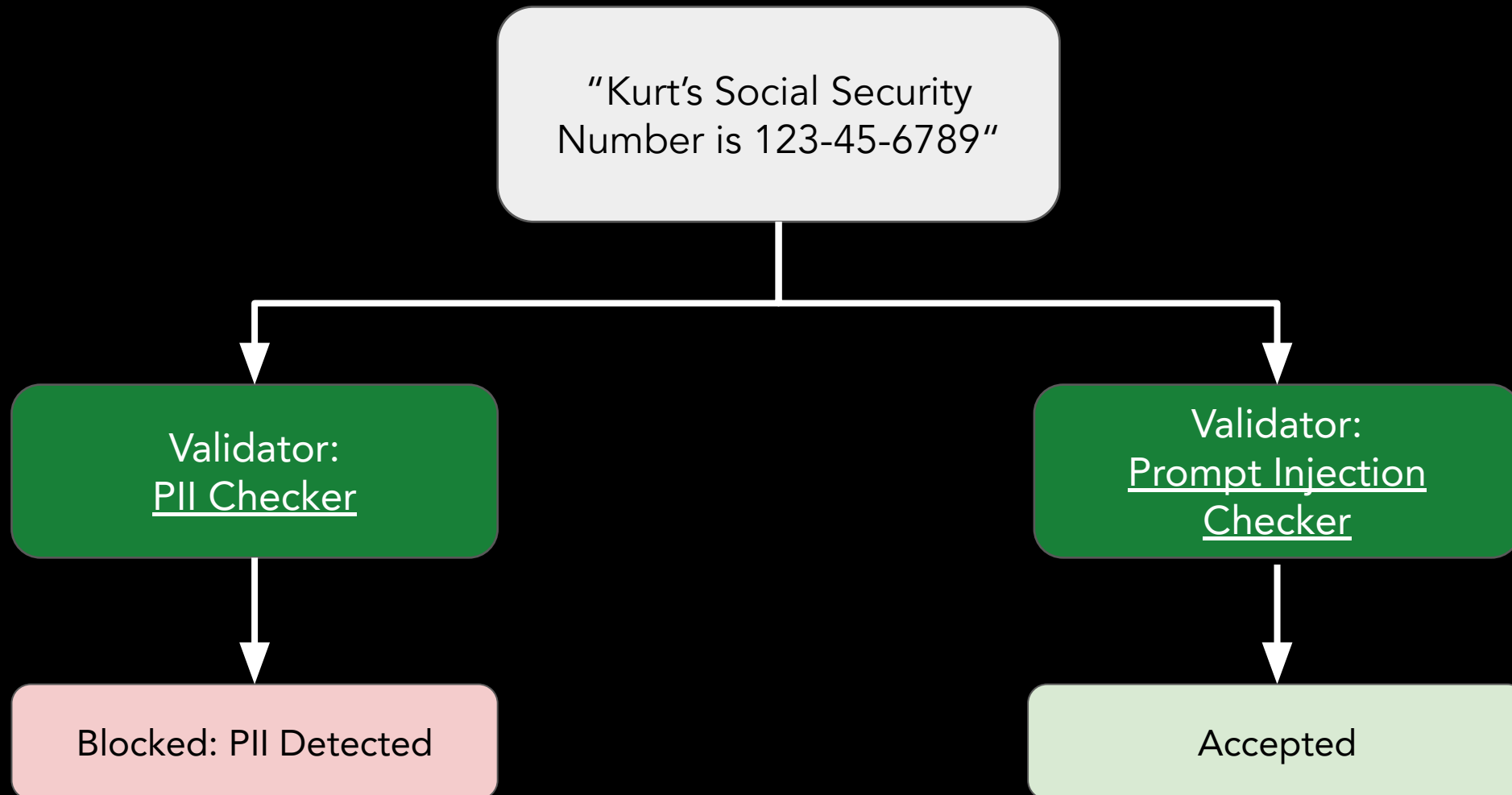
Validators

$$\mathcal{V} : (\mathcal{P}; \mathcal{T}) \rightarrow \mathcal{D}$$

Where:

- **V: Validator**
- **P: Payload**
- **T: Target**
 - **Events:** Set of events (e.g., tools/call) that this validator will intercept
 - **Phase:** The phase (request or response) that this validator will intercept
- **D: Decision**

Validator Examples



Validator Examples

```
{  
  "name": "test"  
  "value": 42  
}
```

Validator:
JSON Checker

Blocked:
Missing comma after "test"

```
def foo(y: int):  
  return x + y
```

Validator:
Code Checker

Blocked:
Symbol "x" is undefined

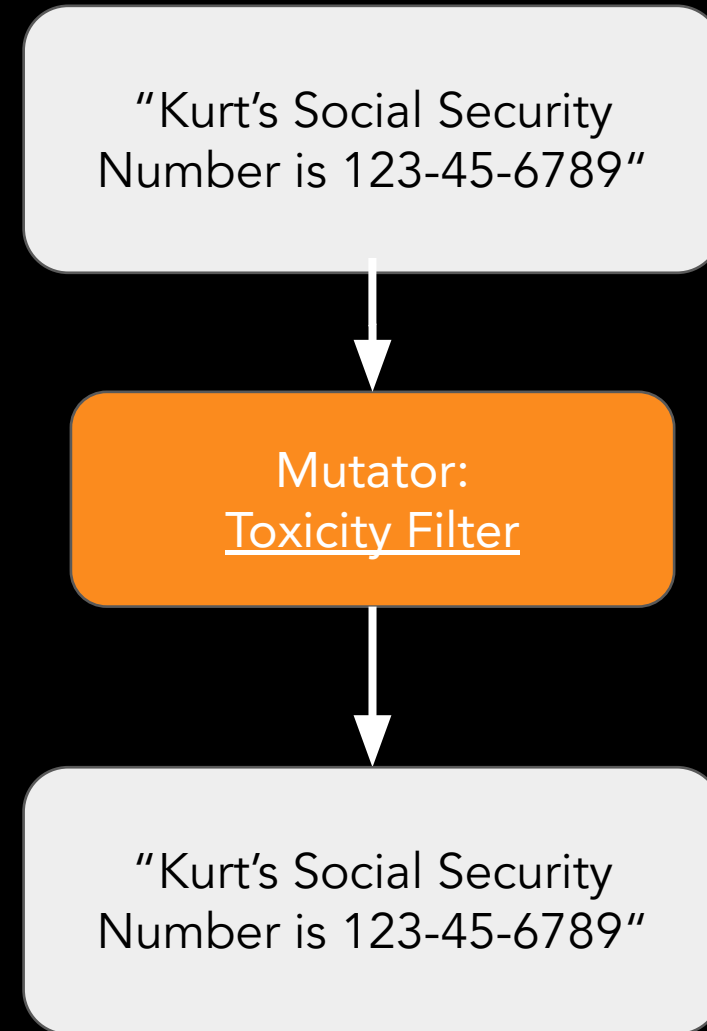
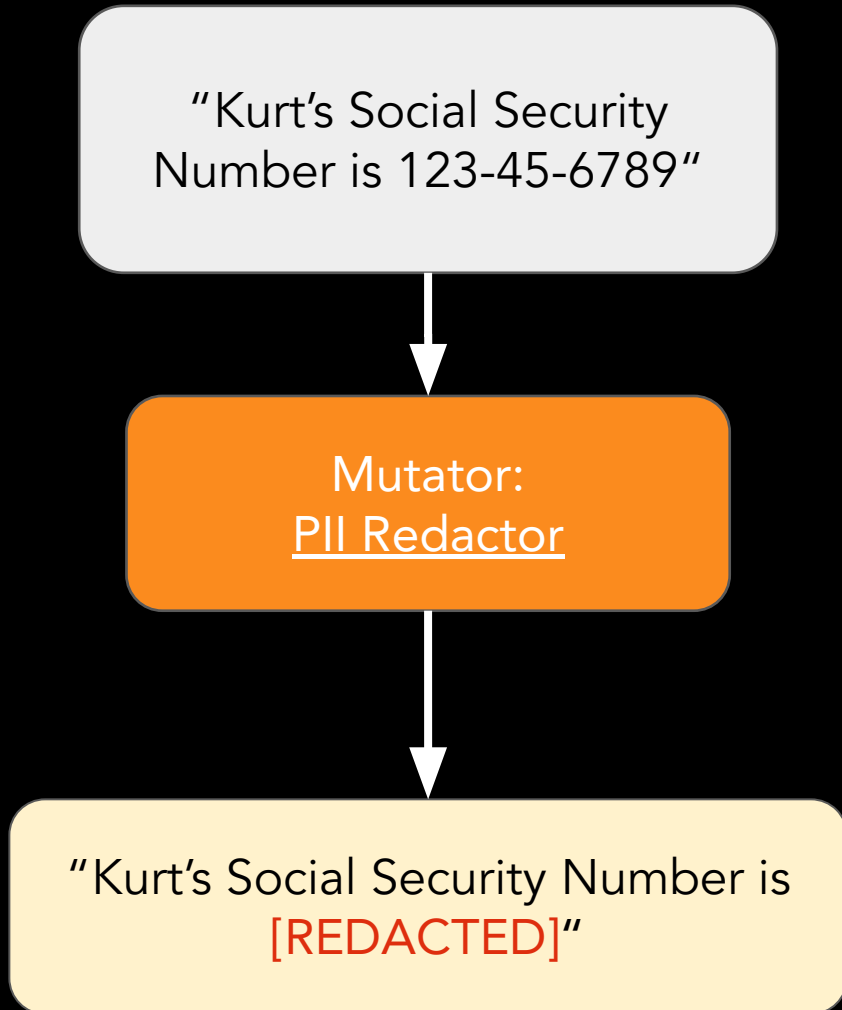
Mutators

$$\mathcal{M} : (P; T) \rightarrow P'$$

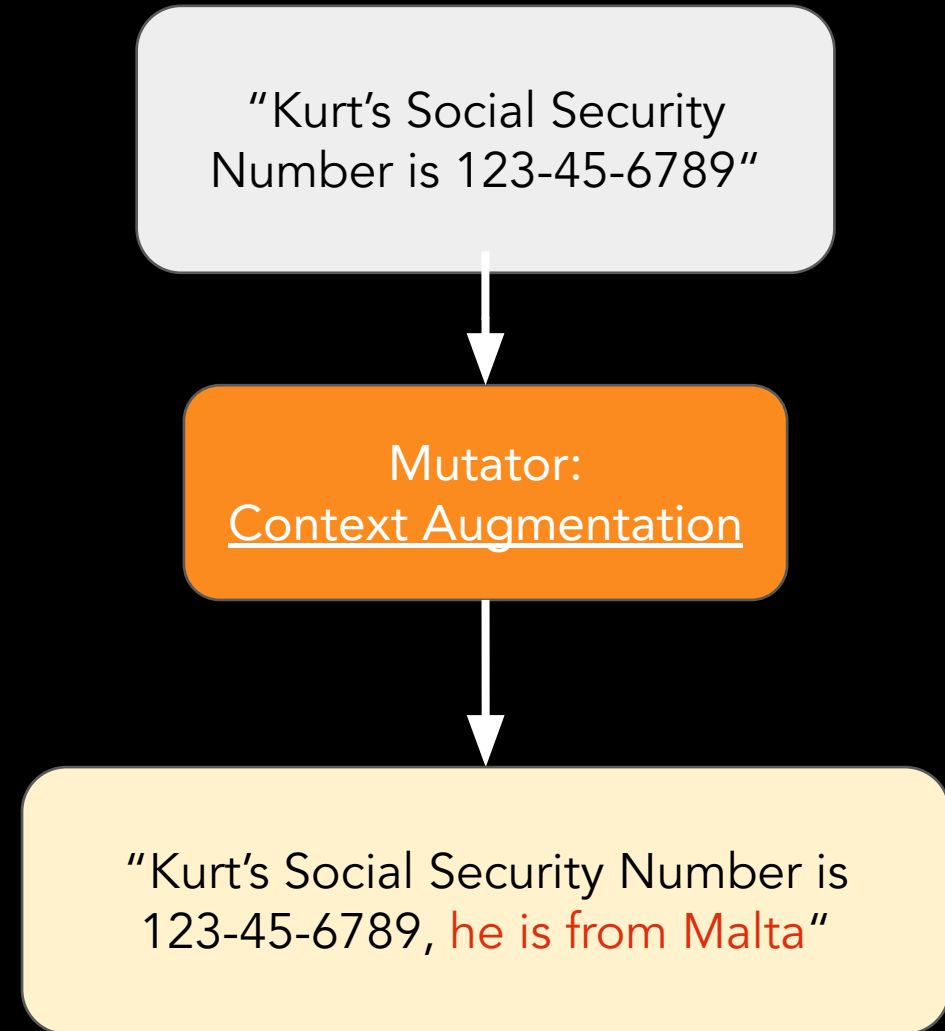
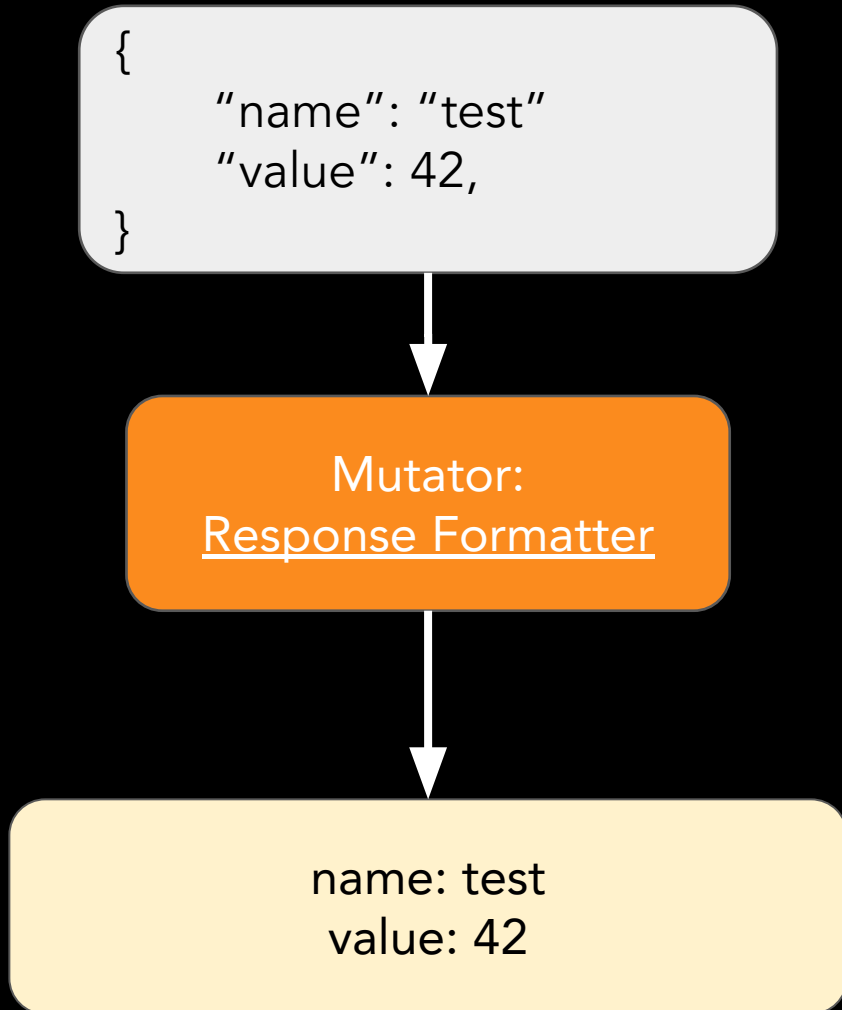
Where:

- **M: Mutator**
- **P: Payload**
- **T: Target**
 - **Events:** Set of events (e.g., tools/call) that this mutator will intercept
 - **Phase:** The phase (request or response) this mutator will intercept
- **P': Transformed Payload**

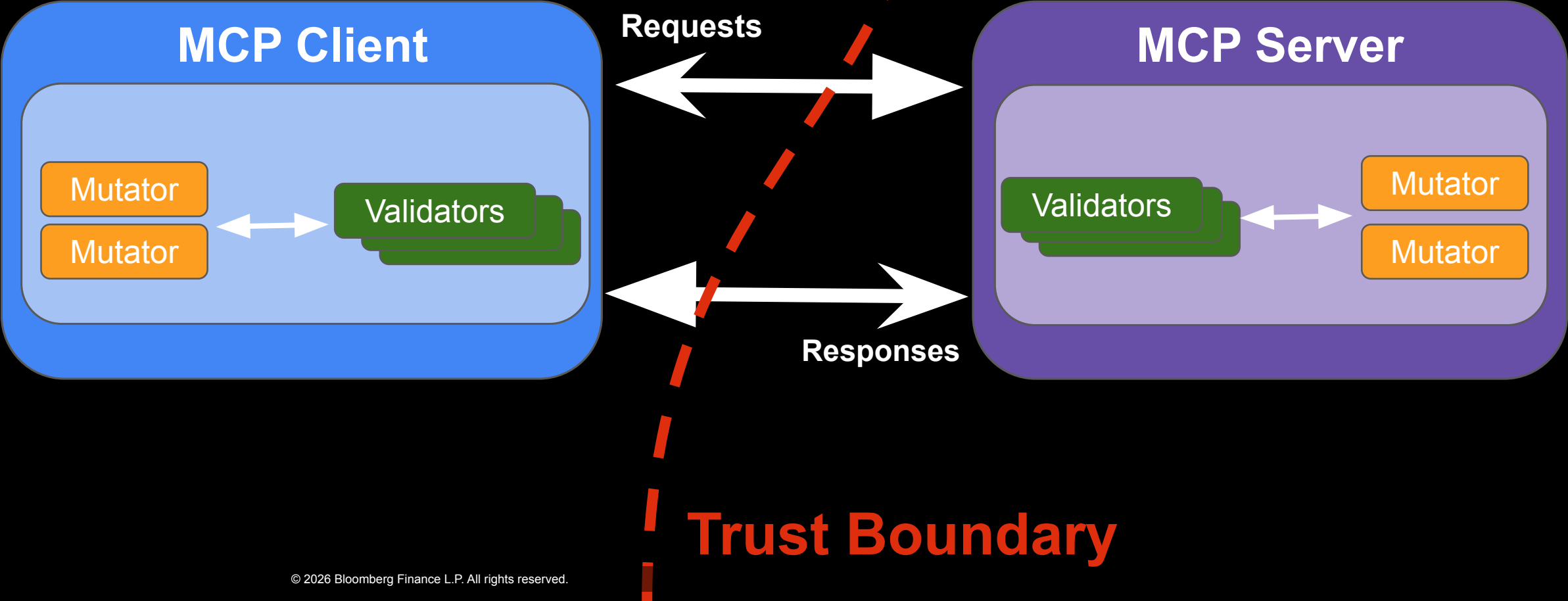
Mutator Examples



Mutator Examples



Execution Model



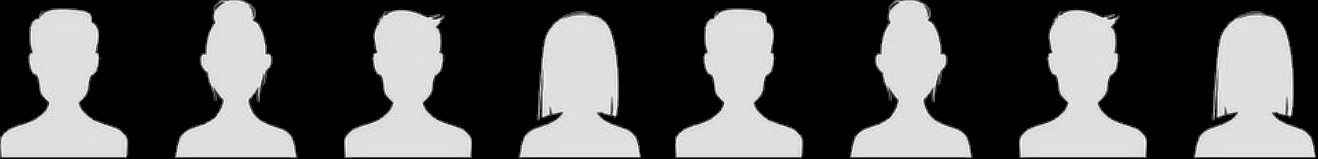
Execution Model

- Sending Data: **Mutate -> Validate -> Send**
- Receiving Data: **Validate -> Mutate -> Process**
- **Important:**
 - Mutations are **Atomic**
 - Validators Execute in **Parallel.**
 - Mutators Execute **Sequentially**

Real-World Alignment

Bloomberg and AI

Market participants



Buy Side

Sell-Side

Corporations

Trusted infrastructure for high-stakes financial decisions



Value to clients and the global capital markets



ASKB | A first look at the future of the Bloomberg Terminal for the age of agentic AI

ASKB harnesses the power of agentic AI to transform how you discover insights on the Terminal – so you can work both faster and smarter – using everyday language in a conversational AI interface.

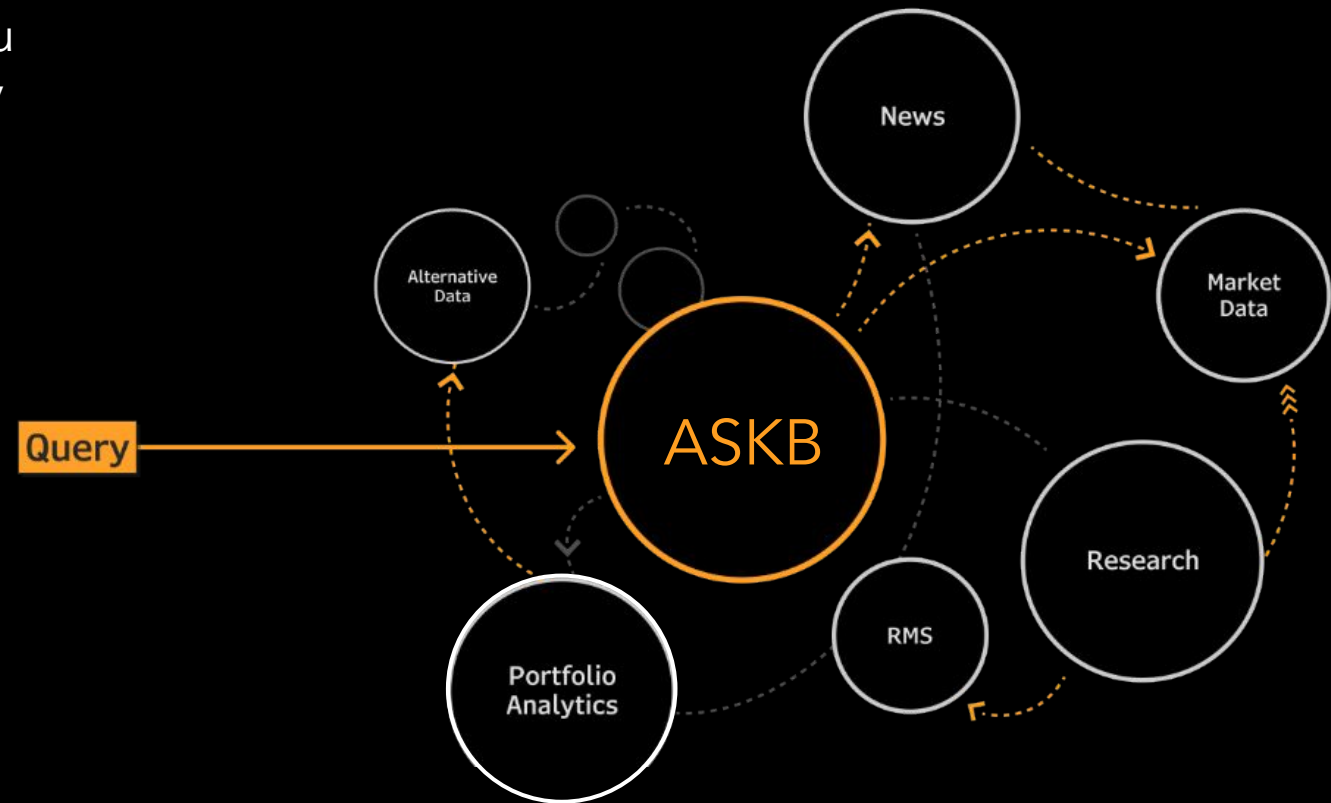
Use plain language to quickly interact with robust data, content and analytics from across the Terminal more intuitively for deeper, more contextualized insights.

Refine your analysis seamlessly, with context preserved.

Embed your analysis into firm-wide research workflows for scaled impact.

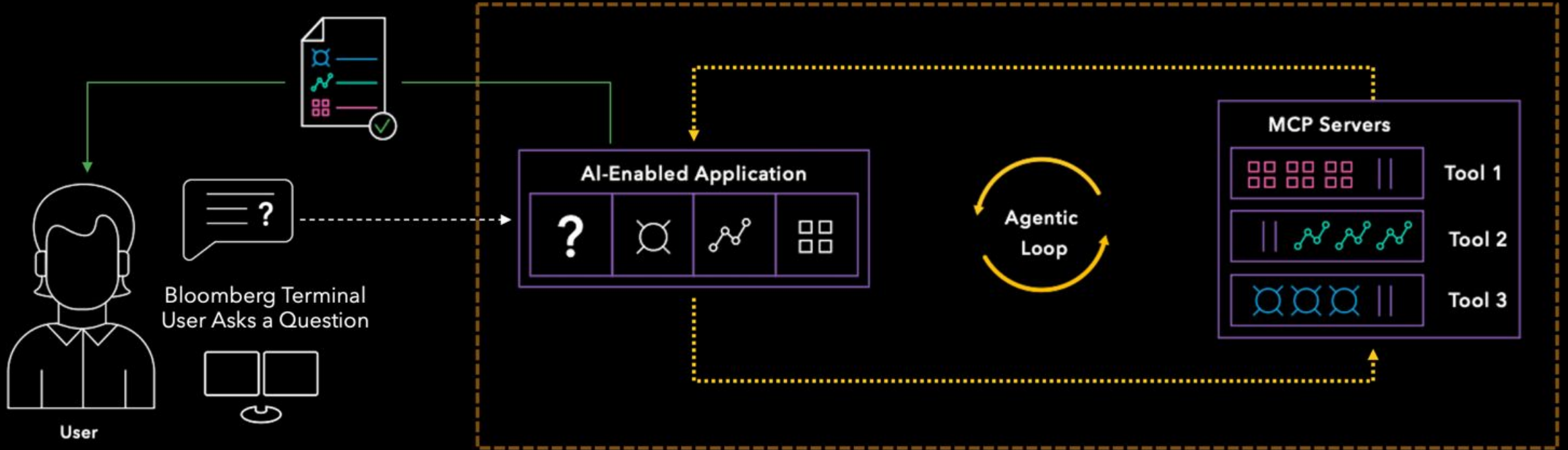
Seamlessly navigate and explore relevant Terminal functionality.

Collaboration Network

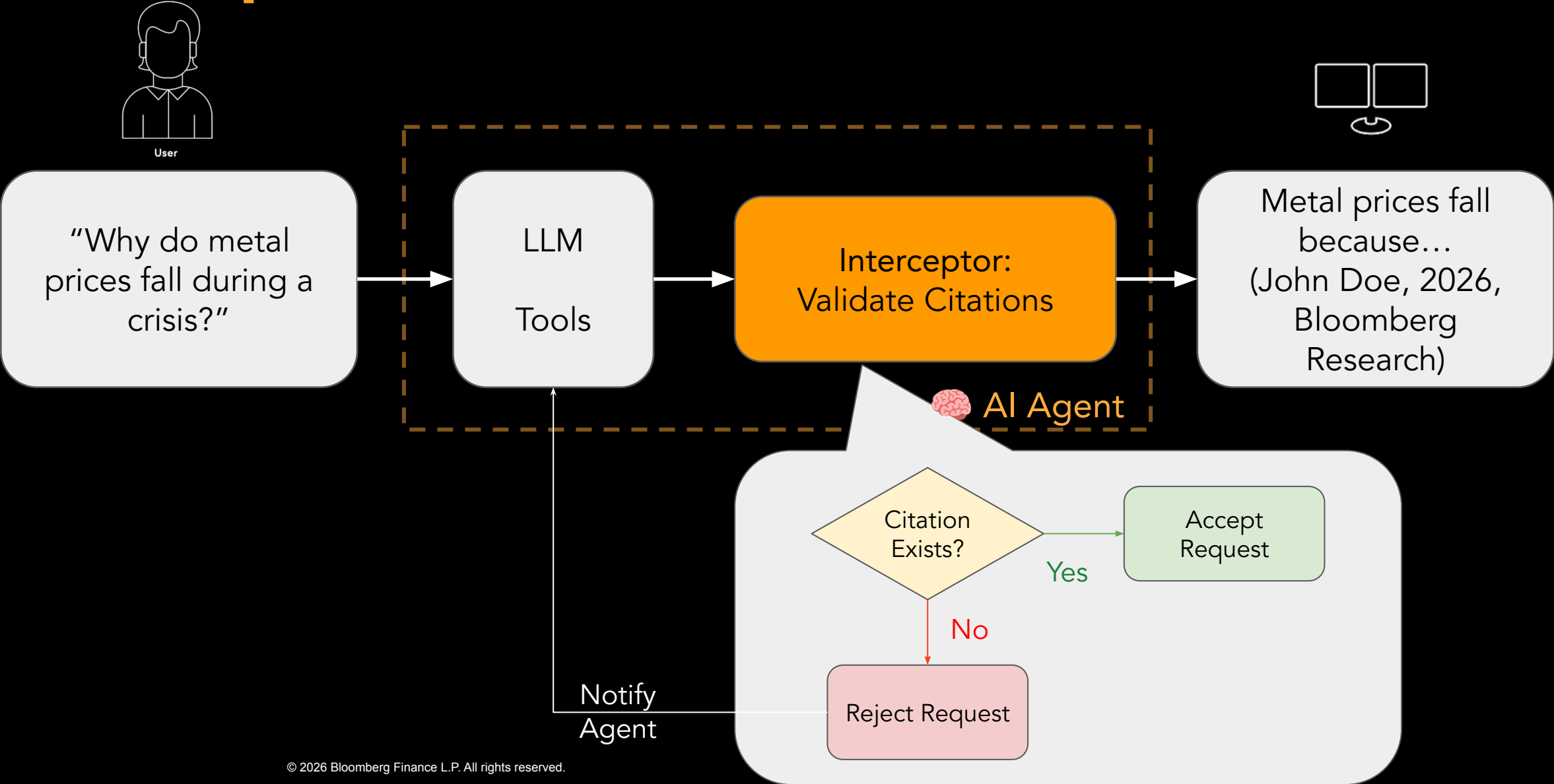


Model Context Protocol | Our Agentic Interoperability Protocol

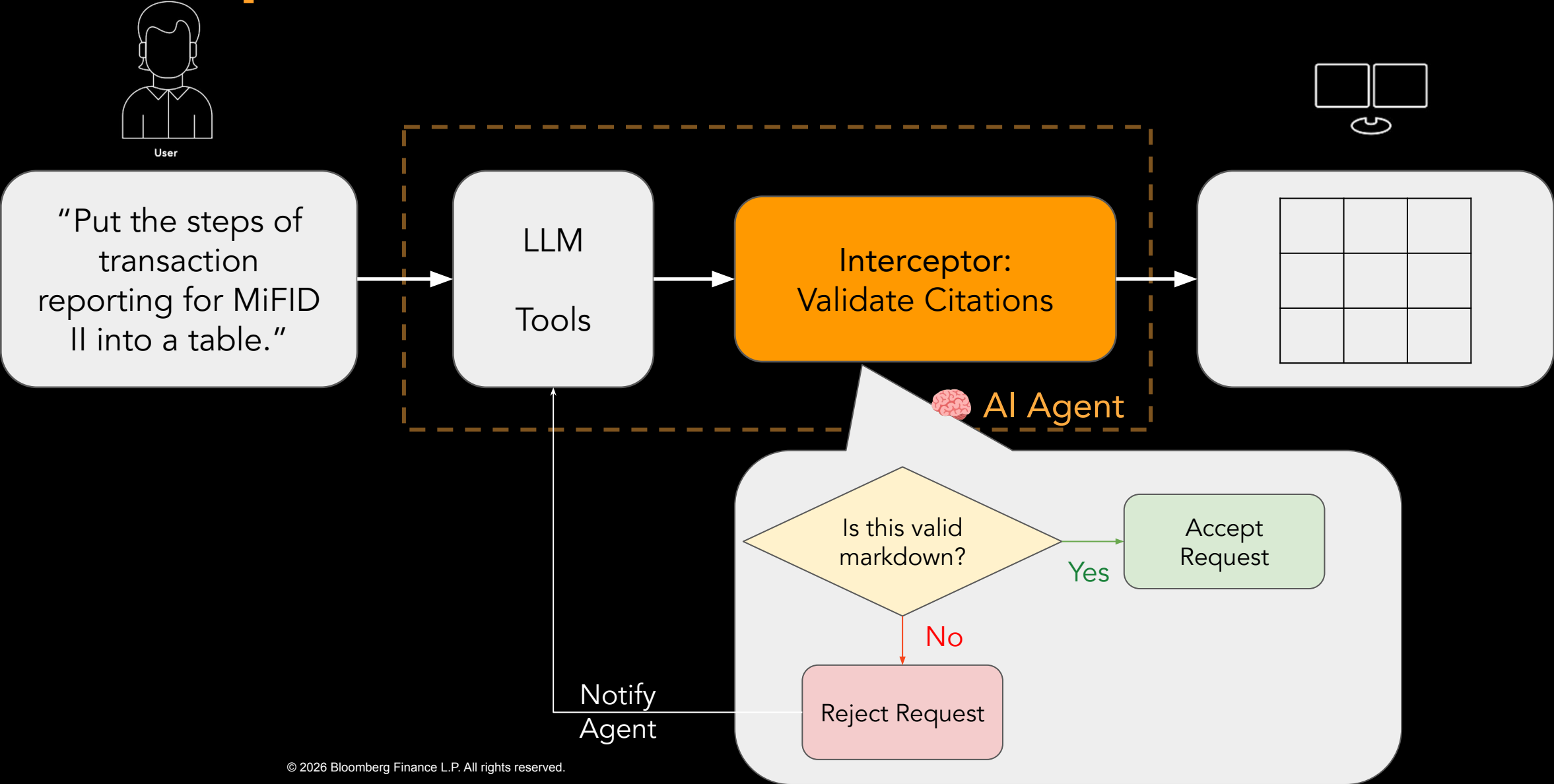
Bloomberg Environment



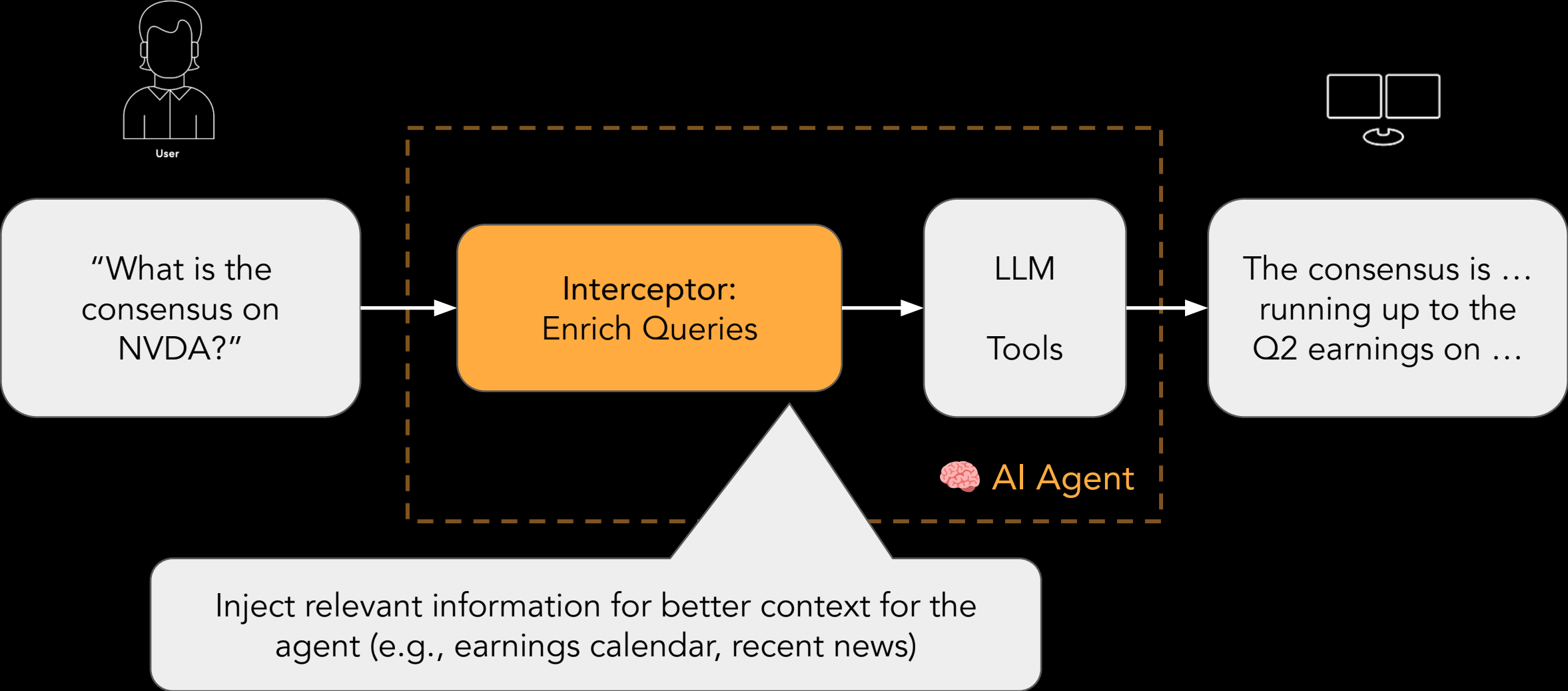
Interceptors as a Validator



Interceptors as a Validator



Interceptors as a Mutator



Get Involved

Contribute to
[SEP-1764](#)



Try Interceptor
Implementation



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Questions?