GTI

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Interpretation of the White Paper "Network Agent and NetMCP Technology"

Speaker: Bin Wei – CMRI

AI Agents Trigger the New Wave of AI

With the breakthroughs of LLM technology, tens of billions of AI agents will be fully integrated into the economy and society, ushering in a new era of redefining value, business logic, and industry ecosystems in various fields.

LLM becomes mature

- Capable of natural language understanding interaction
- Multimodality information convergence
- Reduction in hardware requirements

Agents are widely used

- Evolved into a complex decision-making system
- Capable of self-learning and context-awareness
- Application scenarios expand

Tens of billions of agents explode

- Large scale deployment
- Gradually permeate and restructure the vertical industries
- Single-point tools move towards intelligent interconnection

2024

ERNIE
Gemini
GPT
ChatGLM
deepseek
manus

2025

Kimi
Dify
Minimax
Coze

2026+


Terminal agent


Medical agent


Commerical agent

Coding agent


Industrial agent

The Trends of AI Agent and Network Convergence

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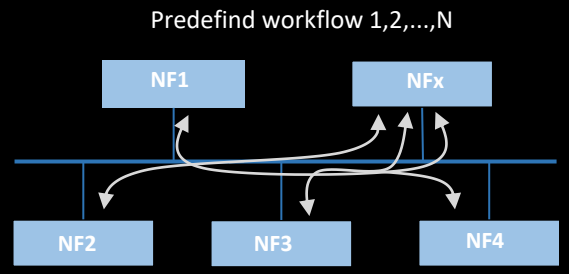
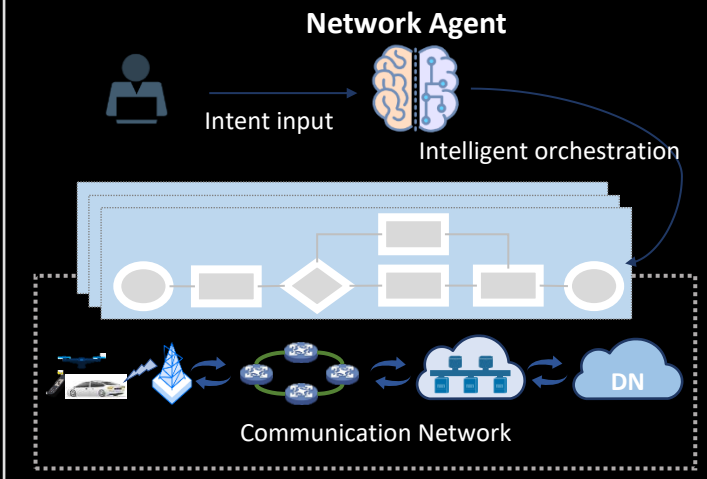
Rule-defined Network
(WorkflowNet)

- Manually defined parameters
- Static execution of workflow
- Template-based calling of network services



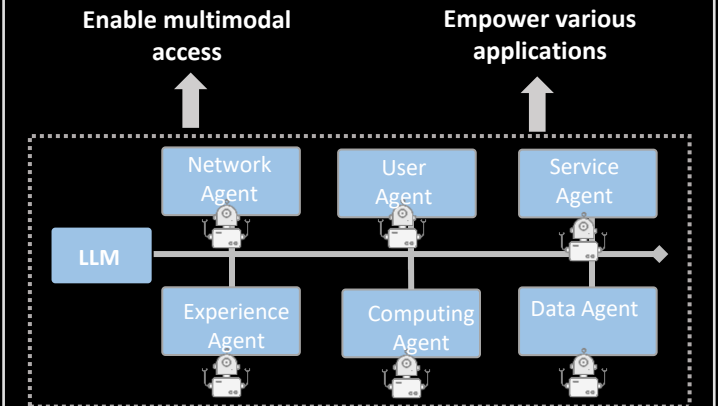
Agent-based Intent-driven Network
(Agent4Net)

- Perceive user intent and understand natural language input
- Autonomous orchestration and execution
- Flexible and personalized network services

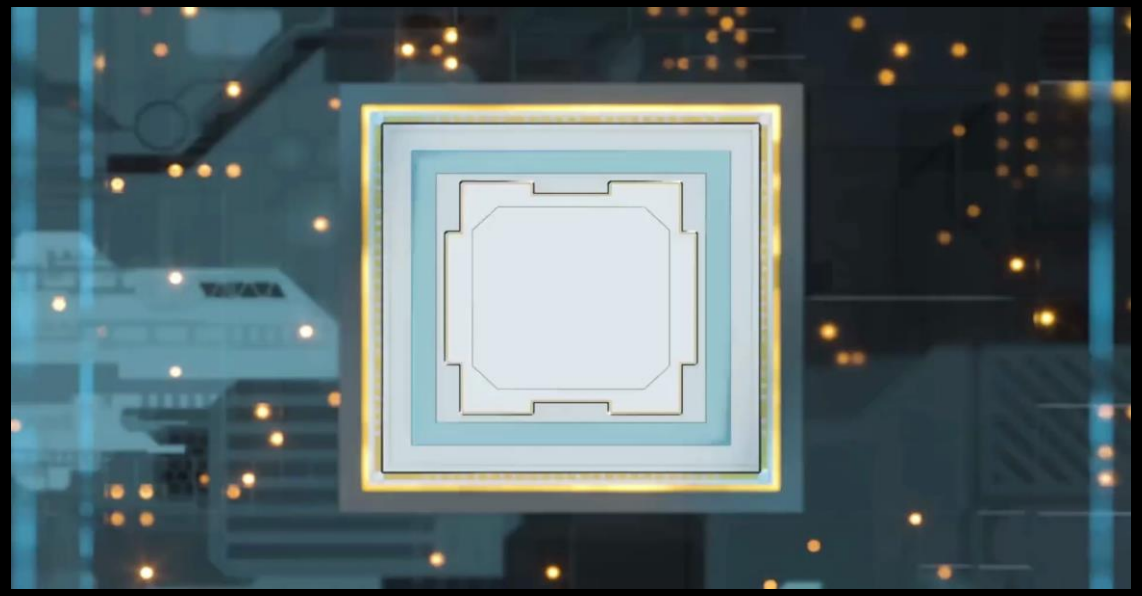


Agent-native Network
(AgenticNet)

- Reshape network architecture
- Low coupling and stateless
- From function-centric to business-centric



The Vision of Network Agents



Native Intent

Endogenous Intelligence

Autonomous Policy

Symbiotic Ecosystem

System Architecture of Network Running Agent

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Proposing a unified 3-layer system architecture of network running agent to enable ubiquitous agents connectivity, intent understanding, dynamic planning, and chain-style execution

Orchestration & Coordination Layer

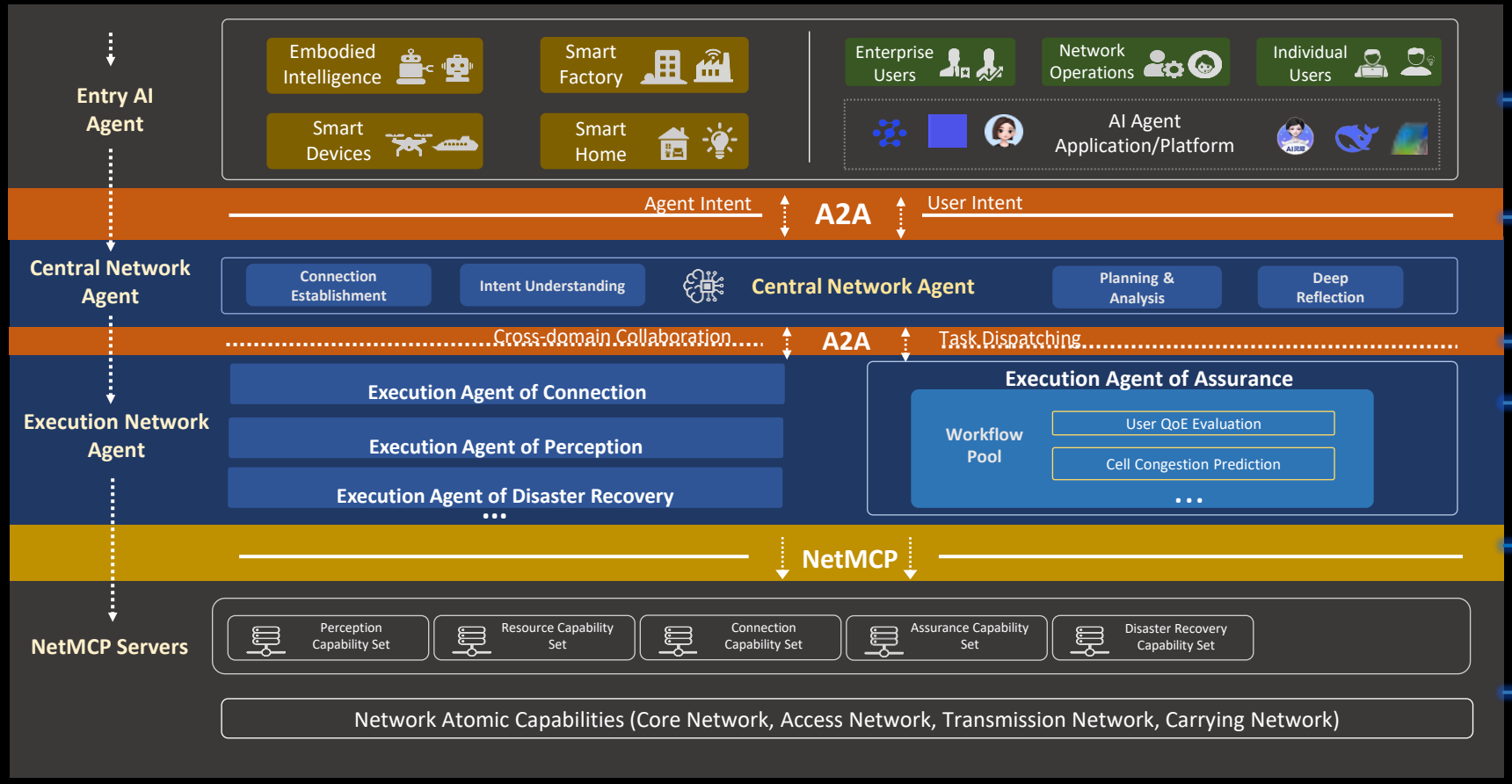
- Receive intent requests, understand user needs, and assign tasks to execution agents

Intelligent Execution Layer

- Pull from existing workflow templates for quick execution
- Dynamically compose new workflows when facing complex scenarios

Atomic Capability Layer

- Network functions are abstracted into standardized tools accessible through NetMCP Server



① Open Intent Portal

② Multi-agent Collaboration

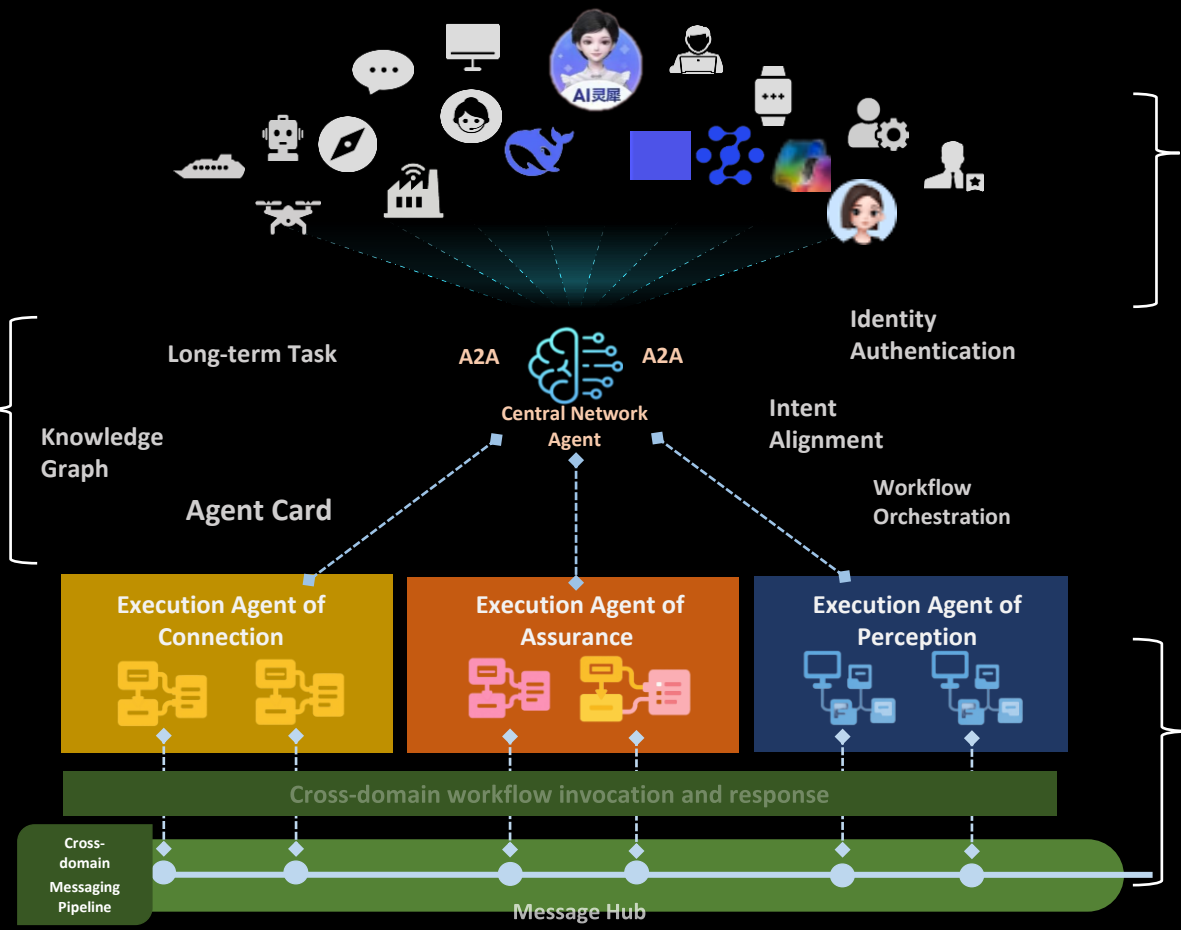
③ Workflow Orchestration

④ MCP Telecom-transformation

⑤ Capability Toolization

Key Technical Features (1/2)

To enable precise mapping from user intents to network operations, the proposed hierarchical network agent system support open intent portal, multi-agent collaboration and workflow orchestration.



① Open Intent Portal

- allow the UE-side agents and embodied AI to access network services via intents freely and easily

② Multi-agent Collaboration

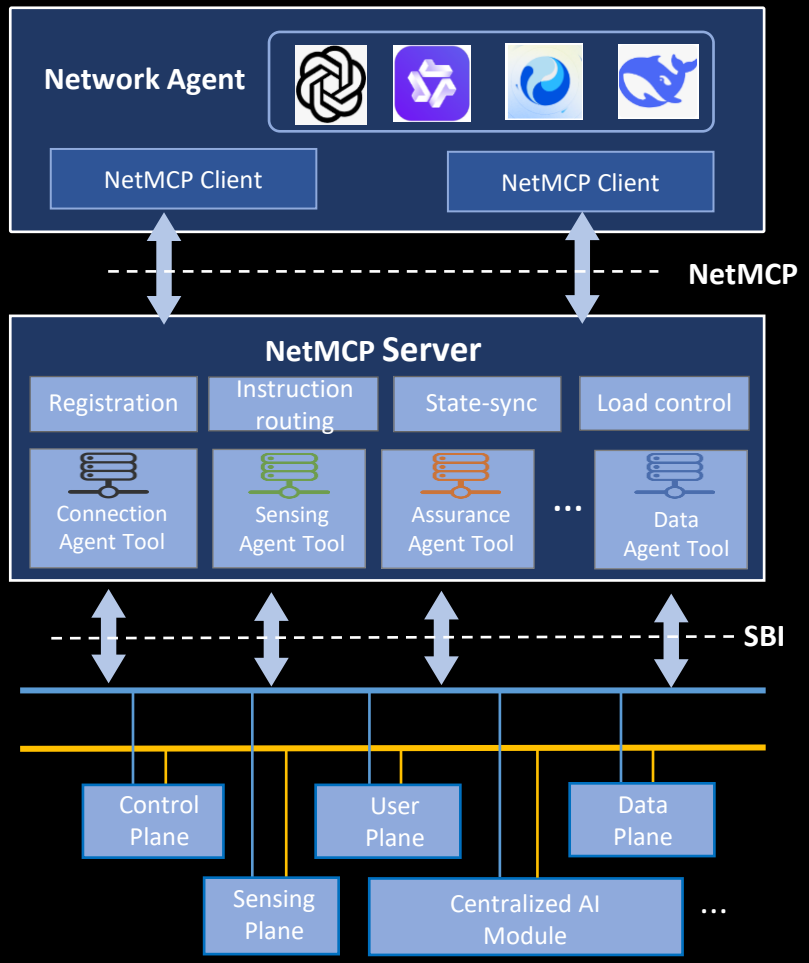
- Central agent undertakes task planning, decomposition and allocation
- Execution agents complete the domain-specific tasks assigned by central agent

③ Workflow Orchestration

- Enable to coordinate network atomic capabilities flexibly
- Based on pre-defined templates and diverse network tools

Key Technical Features (2/2)

To enable the network agents to invoke the tools flexibly, network capabilities are wrapped as atomic agent tools, and a pioneering telecom-oriented tool invocation protocol -- NetMCP is proposed.



④ NetMCP

- NetMCP is proposed to adapt to the telecom-grade network requirements
- Provide the "CCAE" features by a series of innovative mechanisms

⑤ Capability Toolization

- Wrap the services provided by a cluster of NFs into atomic agent tools
- Enable to compose network capabilities in a modularized and efficient manner

Compatibility

- Adapt to SBA architecture
- Seamless Integration of MCP ecosystem

Controllability

- Service request validation
- Optimizable and trackable call flows

Availability

- Distributed load balance
- Flexible disaster recovery

Efficiency

- Optimized transport protocol
- Optimized model context

Network Agents Empower New Services for Individuals, Society, and Industries

Personalized Network

Socialized Care

Industrial Collaboration

Technical Development and Use Cases

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We have been promoting the network AI agent technology from research to practice, and have achieved industry-first E2E intent-driven network services.

NetMCP Framework Proposal
Shanghai, China
Enhanced MCP with Carrier-level capabilities

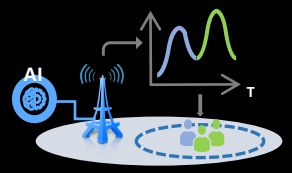
2025.06

Prototype Validation
Beijing, China
NF capability invocation based on NetMCP protocol

2025.07

UC1:Package Recommendation
Fujian, China
Built wireless agent for package plans recommendation to users

2025.10



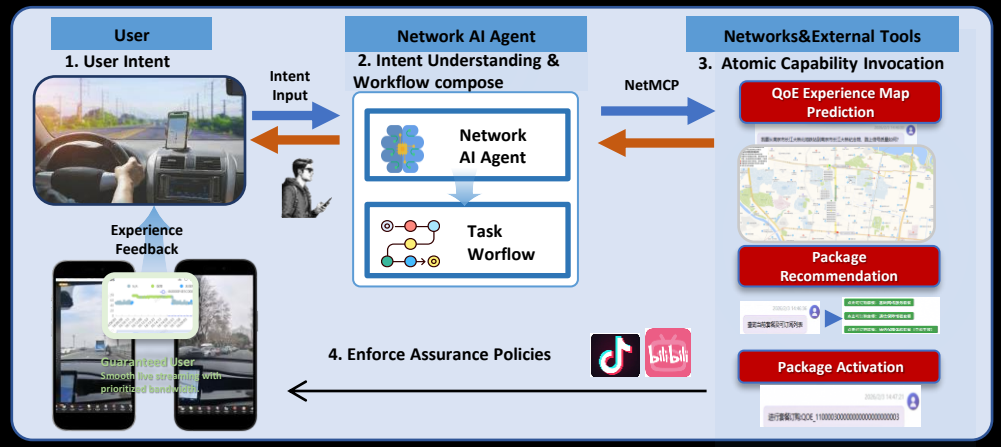
99.4% ↑
Recommendation Accuracy

2026.01

UC3: One-stop Travel Experience Assurance
Jiangsu, China

- User says one sentence, and the network responds and meets his requirements
- The network provides E2E services from route planning to journey assurance.

30% ↑ Subscription Rate
60% ↓ Duration/ Frequency
90% ↑ MOS Gain

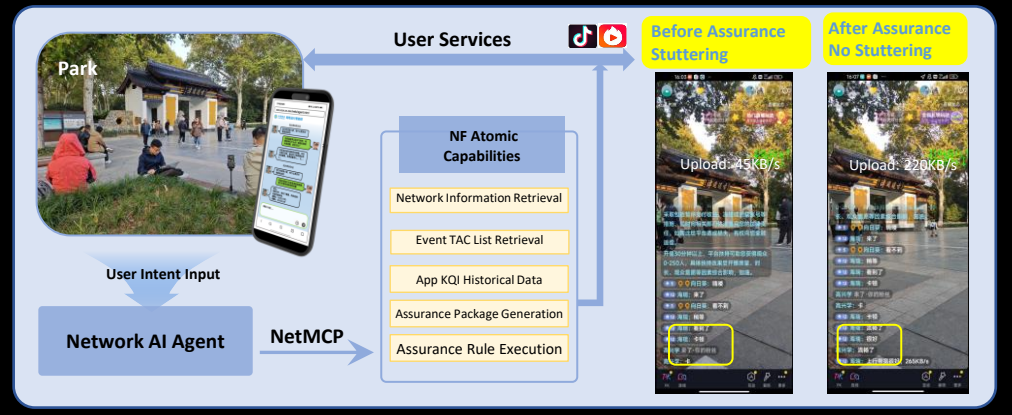


2025.12

UC2: Personalized Live Streaming Assurance
Anhui, China

- Users use natural language to customize network policies while watching live stream.
- Network delivers assurance plan automatically and achieves 80% MOS improvement.

70% ↑ Uplink Data Rate
60% ↓ Duration/ Frequency
80% ↑ MOS Gain



Future Plan

Standards Promotion

- Take standards as the priority.
- Do research on the scenarios, architecture, protocols, and key technologies of network agents.
- Build consensus.

Ecosystem Construction & Cultivation

- Continuously promote the NetMCP technical specifications.
- Establish industrial collaboration mechanisms.
- Build an open and co-created agent ecosystem platform.

Scenario Excavation & Expansion

- Deeply excavate the application potential of network agents in vertical industries.
- Motivate the expansion of agents from single-point applications to end-to-end collaborative solutions.

Commercial Exploration & Implementation

- Accelerate the transition of network agents from technical validation to large-scale application.
- Explore differentiated business monetization models.

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“Network Agent and NetMCP Technology”

White Paper Download Link

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