

Call for participation and comments on revised NLIP specification and new WebSocket binding

To: Universities, Research Institutes, Government entities, enterprises, IT companies, telecommunications operators and all interested stakeholders

From: Ecma International Technical Committee TC56 (Natural Language Interaction Protocol for communication with Artificial Intelligence (AI) agents)

Date: 16 July 2025

Ecma TC56 is pleased to announce two major milestones in the development of the Natural Language Interaction Protocol (NLIP):

- The publication of a second draft of the NLIP core specification
- The release of the first draft binding of NLIP over WebSocket

These updates mark significant progress in establishing a secure, interoperable, and multimodal communication standard for AI agents and human-agent interaction.

Background

As Generative AI (GenAI) continues to evolve, the emergence of agentic AI—systems of intelligent agents capable of reasoning, planning, and acting autonomously—has created a pressing need for standardized communication protocols. NLIP addresses this need by defining a flexible, multimodal message format that supports structured data, natural language, audio, video, and other modalities.

The revised NLIP specification (2nd draft) introduces enhanced message semantics, expanded modality support, and clarified conformance requirements. It also formalizes the roles of client, server, proxy, and middle agents, enabling more robust and scalable agent architectures.

Complementing this, the new WebSocket binding draft defines how NLIP messages can be transmitted over WebSocket using CBOR (Concise Binary Object Representation) for compact, efficient, and real-time communication. A fallback to UTF-8 encoded JSON is also specified for compatibility with non-CBOR-capable peers.

Key Features

NLIP 2nd draft highlights:

- Unified message structure with support for multimodal submessages
- Defined semantics for control, token, and authentication exchanges
- Expanded format/subformat taxonomy (e.g., structured/json, binary/audio.wav, location/GPS)
- Support for redirection and large binary uploads via base transfer protocols

WebSocket binding highlights:

- CBOR encoding for binary WebSocket frames with native support for audio, image, and other binary content
- Optional fallback to JSON text frames for broader compatibility

- Defined endpoints: wss://<host>:<port>/nlip/ws and wss://<host>:<port>/nlip/ws/text
- Support for session management, streaming, and error handling

Timeline for feedback

Stakeholders are invited to review and comment on both the revised NLIP specification and the WebSocket binding draft.

- **Comment deadline:** 15 August 2025
- **3rd draft publication:** 1 September 2025
- **Approval of final draft specifications:** December 2025

Access and participation

- **Draft specifications:** https://github.com/nlip-project/ecma_draft
- **TC56 information:** <https://ecma-international.org/technical-committees/tc56/>
- **Ecma members site:** <https://members.ecma-international.org/>

TC56 encourages all interested parties to contribute feedback, propose improvements, and participate in the development of this foundational standard for AI agent communication.