

ETSI GR ENI 056 V4.1.1 (2025-10)



GROUP REPORT

Experiential Networked Intelligence (ENI); Study on Multi-Agent Frameworks for Next-Generation Core Networks

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ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B
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Foreword

This Group Report (GR) has been produced by ETSI Industry Specification Group (ISG) Experiential Networked Intelligence (ENI).

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1 Scope

The present document studies Multi-Agent Systems (MASs), which comprise multiple Artificial Intelligence (AI) agents designed to solve a set of complex tasks collaboratively. It reviews popular existing open-source frameworks to implement MASs and existing multi-agent topologies, conversation patterns and key design principles. This includes interface design for collaborative inference, key performance indicators to quantify the performance of MASs, as well as various workflow options to perform closed-loop optimization between AI agents. While focusing primarily on the employment of MASs in the next generation mobile networks, the present document explicitly discusses recommended architectural changes in the design principles of core network together with potential standard impacts.

2 References

2.1 Normative references

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The following referenced documents may be useful in implementing an ETSI deliverable or add to the reader's understanding, but are not required for conformance to the present document.

- [i.1] 3GPP TS 23.501 (V19.2.1): "System architecture for the 5G System (5GS)".
- [i.2] 3GPP TS 29.500 (V19.2.0): "Technical Realization of Service Based Architecture".
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