

# **Next Generation Mobile Networks Alliance [NGMN]**

Title: LS to 3GPP from NGMN: 'HIGHLIGHTS - AI SURGE AND ITS IMPLICATIONS FOR 6G'

Source: NGMN Alliance

To: 3GPP SA, 3GPP RAN, 3GPP CT, 3GPP PCG and 3GPP TSG,

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### HIGHLIGHTS - AI SURGE AND ITS IMPLICATIONS FOR 6G

It is a pivotal moment in the telecommunications industry, propelled by the unprecedented AI surge and the beginning of 6G standardisation. AI is advancing at a rapid pace and will remain a dominant force, reshaping society far beyond the 6G era.

This document consolidates NGMN operators' perspective on how AI may impact 6G standardisation, serving as guidance for 3GPP ongoing 6G studies. A detailed publication will be published in January 2026.

#### IMPACT OF AI TRAFFIC ON NETWORK

The rapid proliferation of Al applications – particularly those with autonomous, task-driven capabilities introduces significant uncertainty into future network demand. While the precise impact of these Al-driven workloads on traffic patterns is difficult to predict, several factors could materially alter today's assumptions:

- **Multi-model Al applications**: services requiring real time video exchange may drive substantial traffic growth and shift traditional traffic patterns.
- **Al-enabled devices and use cases**: Consumer applications (e.g. AR glasses) and enterprise scenarios (e.g. autonomous vehicles) could require frequent upload of images and video after local processing, increasing uplink demand and challenging current downlink-heavy network designs.
- **Geographic and device availability**: Al-intensive areas and device clusters may experience sharp, localised surges, creating uneven traffic patterns.

Given these uncertainties, **network design must prioritise flexibility**. 3GPP should explore mechanisms that allow (semi-permanent) adjustments in uplink/downlink ratio without requiring major standard revisions. This adaptability will be critical to accommodate evolving Al-driven requirements across diverse devices, networks and regions.



#### **Network for AI:**

6G must go beyond simply providing connectivity services to deliver new services, by designing networks that are more intelligent, flexible, and trustworthy.

Key design enablers include:

- Flexible, token-based charging models reflecting real resource use.
- Dynamic and intelligent networking for agent collaboration.
- Enhanced QoS and adaptive policy control to support traffic routing achieving seamless connectivity.
- Unified data and model frameworks across devices and domains.
- Secure trust, authentication and authorisation mechanisms for AI agents' digital identity.

# Al for Network and implications for 6G architecture evolution:

Al is expected to be an important network capability for 6G networks, enabling more efficient usage of network resources, network automation, intent-based management and intelligent orchestration. Al could be applicable to all domains and different layers of the network, including the operation and maintenance of the same.

NGMN expects 6G will be Al-ready and built on the foundations of 5G networks, evolving from Service-Based Architecture (SBA).

# Challenges & Considerations for Adopting Al:

- Adoption of AI capabilities on a separate logical layer on top of SBA, where agents and large language models (LLM) could be deployed, avoiding unnecessary impact on the existing architecture. This should not restrict the possible integration of AI-related features embedded within the NFs
- Al interfaces (e.g., A2A, MCP) will complement existing and future APIs, ensuring readiness for the traffic volumes and capabilities required by emerging AI services
- Multi-vendor interoperability frameworks are needed to ensure secure, scalable, and open ecosystems
- Deployment strategies must align with cost and sustainability goals, and validation of real-world performance gains is essential.
- Continued support for non-Al alternatives if these alternatives are necessary to ensure reliability, flexibility and openness.
- Coordinated UE-network operation is needed to efficiently execute AI models in both two-sided and one-sided models.



#### **KEY TAKE AWAY MESSAGES FOR 6G STANDARDISATION**

# NGMN believes that the following are required:

- Standardised architecture, protocols and interfaces enabling efficient end-to-end support of AI
  functionalities, integrated across all domains (RAN, Core, Transport) and all network layers,
  including devices
- Standards that allow adaptability to support changing traffic patterns to accommodate the uncertainty on the impact of evolving Al use cases.
- Evolution of the existing (5G SBA) network architecture should be justified by value driven AI use cases and service scenarios, ensuring alignment with societal and business needs.
- 6G should support agent-to-agent and agent-to-network communication.
- Functional and performance requirements for AI capabilities across the 6G system.
- Establishment of interoperability and trust frameworks to enable secure, multi-vendor, and multi-agent deployments and operations.
- Emphasising the reuse/adoption or enhancement of "Al interfaces" from telco and non-telco where appropriate and mainstream. (e.g. A2A or MCP)

# Intention of the LS and required actions

NGMN requests 3GPP to take these above recommendations into account within their ongoing 6G studies. Please ensure this submission is included in the upcoming 3GPP meeting in USA, Dec 2025.

We look forward to continuing to work closely with 3GPP in the future.